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JOURNAL *of* EDUCATIONAL RESEARCH

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PREDICTING ACADEMIC SURVIVAL

FRANK S. FREEMAN
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ALTHOUGH tests of intelligence have been used with college freshmen now for more than ten years, there is still much doubt concerning their real value in predicting academic survival. It is true that more than a few studies have been made showing that the tests of mental ability are positively correlated with actual college marks, the coefficients ranging roughly from +.20 to +.70.[1] Other investigations have been directed toward the determination of the most probable averages that will be achieved by students of a given intelligence test rank.[2] Still another method is the determination of a critical score.[3] All these investigations have yielded interesting and valuable data; but none, it appears, have dealt with the problem which, to the writer, seems most fundamental: namely, how well do the tests of mental ability predict academic *survival*, regardless of marks?[4] As already pointed out in an earlier study,[5] there are too many elusive variables in the determination of marks to warrant their use in the study of the tests' predictive value by means of correlations and probable scores. If these factors were constant and measurable rather than extremely variable and non-measurable, marks and correlations would be of greater significance. Yet, the fact

[1] For example, Pintner, R. *Intelligence Testing*, Holt (1923), Chap. XII; Wood, Ben D. *Measurement in Higher Education*, World Book Co. (1923); Dearborn, W. F. *Intelligence Tests*, Houghton Mifflin (1928), Chap. II; Thurstone, L. L. "The 1929 Psychological Examination," *The Educational Record*, XI, No. 2.

[2] Rosenow, C. "Predicting Academic Achievement." *Pedagogical Seminary*, December, 1925.

[3] Thurstone, L. L. "Mental Tests for College Entrance." *Journal of Educational Psychology*, March, 1919.

[4] An approach to this problem is O'Brien, F. P. "Selection and Retention of College Students," *Journal of Educational Research*, XVIII, 1928.

[5] Freeman, F. S. "Elusive Factors Tending to Reduce Correlations between Intelligence Test Ranks and College Grades." *School and Society*, June 15, 1929.

TABLE I

MEANS AND STANDARD DEVIATIONS OF TERM MARKS

Decile	TERM															
	First		Second		Third		Fourth		Fifth		Sixth		Seventh		Eighth	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
I	78.19	8.15	78.42	8.8	78.02	8.05	79.21	7.6	79.65	8.3	80.53	7.4	80.8	6.5	81.23	6.
II	76.45	8.2	78.52	8.15	76.56	7.85	78.58	7.35	79.03	7.1	80.18	6.4	79.83	9.6	79.23	6.6
III	74.66	7.65	76.41	7.9	75.02	8.2	76.02	7.5	77.6	7.8	78.16	8.	80.07	5.7	80.48	6.95
IV	73.82	8.6	75.04	7.6	74.65	5.8	75.86	7	77.35	6.6	78.53	6.55	78.69	6.8	79.95	6.5
V	71.64	8.6	74.23	8.35	73.95	7.55	74.92	7.35	76.74	7.75	77.56	6.1	78.37	5.8	78.5	8.25
VI	69.97	9.05	72.6	8.5	72.36	7.8	73.65	7.4	75.45	8.1	74.8	8.35	76.36	7.05	78.36	5.85
VII	70.87	7.65	72.13	7.65	71.64	8.15	74.25	6.95	74.78	7	76	7.5	77.26	7.3	78.66	7.95
VIII	68.04	9.85	71.14	7.5	71.63	7.25	73.45	7.35	75.06	7	76.51	7	74.27	6.55	77.07	5.7
IX	65.6	9	68.9	8.2	71.16	7.6	70.35	8.5	74.09	6.1	75.26	7.15	76	6.85	78.16	7.15
X	65.44	8.95	68.33	8.75	66.67	8.95	70.19	6.75	73.94	6.1	73.94	5.5	75.67	5.2	76.16	5

remains that all students who are able, or very nearly all, do apply sufficient energy to permit them to continue as students. It is clear, of course, that the amount of energy applied to this end will vary with individual capacity. And so long as a student meets at least the minimum requirements of his college, he is *persona grata*. The object of this study, therefore, is to determine how far the tests of mental ability can discriminate between prospective successes and prospective failures. Average marks and correlations will be considered incidentally; and it will be quite obvious that neither one may serve as a very reliable index, inasmuch as marks vary so widely within each decile group (based on the mental tests), and because the overlapping of ranges from decile to decile is so great, with a consequent reduction of the coefficient of correlation.

Briefly, then, we wish to answer the following question as far as possible. To what extent does the test of mental ability (in this case the Psychological Examination of the American Council on Education) indicate the possibilities that a student will satisfy the requirements of his college so that he may remain a student? The reply to this question will, of course, be applicable to the college whose students are being dealt with, and for the range of ability represented by this student body, inasmuch as the limits of decile test scores are determined by this body.

First, it is obvious from Table I that though the averages (means) in the early terms decrease consistently from the highest to the lowest deciles, there is, nevertheless, marked overlapping, as indicated by the standard deviations. The differences between the decile averages are markedly reduced after the fourth term.

These facts are further demonstrated in Table II giving the correla-

TABLE II

CORRELATIONS BETWEEN MARKS AND DECILE RANKS

	r
First term	.44
Second term	.46
Third term	.42
Fourth term	.38
Fifth term	.22
Sixth term	.26
Seventh term	.21
Eighth term	.18

tions between marks and decile ranks. It will be seen that for the first four terms the coefficients are, at best, only moderate, while in the fifth, sixth, seventh, and eighth terms, they are almost negligible. From these data it may only be said that there is a marked relationship between

test rank and scholastic rank in the early terms, but that the relationship becomes negligible after the first two years of the college course. Furthermore, as shown by Table I, although significant differences appear between the averages of the early terms, these averages do, however, conceal the range for each decile. And, in addition, the averages tend to converge in subsequent terms. Naturally, the phenomena of the later terms are to be explained in part by the fact that selective elimination has been operating, thus resulting in a more homogeneous group, in converging averages, and in reduced coefficients of correlation. This elimination tends to operate in the lower deciles much more than in the higher, inasmuch as the unfit will have been eliminated. Note, for example, the marked improvement in the last three deciles from the first term to the eighth, as compared with the small increases of the two highest deciles. As far as survival is concerned, however, we learn nothing directly from Tables I and II.

Tables III, IV and V, on the other hand, shed significant light on the problem. From the first two, the frequency of student elimination in the various terms may be seen for each of the deciles. These same facts, stated as probabilities, are presented in Table V, where the survival qualities of the members of the deciles are readily observed. It will be noted that the college terms included are from the second to the eighth. This means that the base from which the probabilities were calculated is the number who *remained* one term, rather than the number who merely *began* the first term. The writer believes this is justifiable, inasmuch as it would be unfair to include those individuals who

TABLE III

ELIMINATIONS (AFTER A GIVEN NUMBER OF TERMS)

	Term	1	2	3	4	5	6	7	Total	Elim. for reasons beyond control or by transfer	Net
Decile	I	2	4	1	5	1	2	0	15	1	14
	II	7	6	4	6	1	4	1	29	4	25
	III	8	6	3	5	2	9	6	39	8	31
	IV	7	9	3	3	2	3	0	27	4	23
	V	9	11	3	6	1	1	0	31	2	29
	VI	5	11	4	9	5	3	1	38	3	35
	VII	12	10	4	8	1	3	1	39	4	35
	VIII	18	9	8	8	0	1	1	45	1	44
	IX	18	16	6	7	2	2	1	52	7	45
	X	22	16	8	10	1	1	2	60	0	60
	Totals	108	98	44	67	16	29	13	375	34	341

drop out during the first few weeks of the first term for extraneous reasons. Furthermore, it rarely, if ever, happens that a student is forced for scholastic reasons to leave before the end of his first term. Thus the calculations of Table IV are based upon the number who actually were launched on a college career.

TABLE IV

TERMS SURVIVED

Decile	Terms	1	2	3	4	5	6	7	(Degree) 8
	I	123	121	117	116	111	110	108	108
	II	127	120	114	110	104	103	99	98
	III	129	121	115	112	107	105	96	90
	IV	125	118	109	106	103	101	98	98
	V	113	104	93	90	84	83	82	82
	VI	112	107	96	92	83	78	75	74
	VII	114	102	92	88	80	79	76	75
	VIII	117	99	90	82	74	74	73	72
	IX	119	101	85	79	72	70	68	67
	X	117	95	79	71	61	60	59	57
	Totals	1196	1088	990	946	879	863	834	821

The superiority of the first decile group is immediately apparent, for almost 88 percent complete the work for the degree. The decrease in the percentage is rather steady; and on reaching the tenth decile, it appears that a member of that group has something *less* than an even chance of achieving the degree. In fact, it appears that members of the tenth decile group have a chance only slightly better than even of completing more than half the usual college course. The remaining data of this table may be similarly interpreted.

TABLE V

PROBABILITIES OF REMAINING A GIVEN NUMBER OF TERMS (ON BASIS OF 100)

Decile	Terms	(Degree) 8	7	6	5	4	3	2
	I	87.8	87.8	89.4	90.2	94.3	95.1	98.3
	II	77.1	77.9	81.4	81.8	86.8	89.7	94.3
	III	70.	72.3	81.3	82.9	86.8	89.1	93.
	IV	78.4	78.4	80.8	82.4	84.8	87.2	94.4
	V	72.5	72.5	73.4	74.3	79.6	82.3	92
	VI	66.	66.9	68.8	74.1	82.1	85.7	95.8
	VII	65.7	66.6	69.2	70.1	77.1	80.7	89.5
	VIII	61.4	62.3	63.2	63.2	70.	76.9	84.6
	IX	56.3	57.1	58.8	60.5	66.3	71.4	84.8
	X	48.7	50.4	51.2	52.1	60.6	67.5	81.2

Further analysis of the data reveals, however, that of the students who achieved the degree, some have had smooth sailing, whereas others have encountered difficulties.

TABLE VI

PERCENTAGE RECEIVING DEGREES AFTER HAVING SCHOLASTIC DIFFICULTIES

Decile	Degree after Probation	Degree after having been dropped	(A) Total	(B) Total Degrees	$\%\left(\frac{(A)}{(B)}\right)$
I	22	2	24	108	22.2
II	23	2	25	98	25.5
III	24	3	27	90	30.0
IV	18	4	22	98	22.4
V	23	4	27	82	32.9
VI	27	5	32	74	43.2
VII	25	1	26	75	34.6
VIII	27	6	33	72	45.8
IX	24	5	29	67	43.2
X	30	2	32	57	56.1
Totals	243	34	277	821	33.7

TABLE VII

DEGREES

Decile	N	%
I	108	13.2
II	98	11.9
III	90	10.9
IV	98	11.9
V	82	10.0
VI	74	9.0
VII	75	9.1
VIII	72	8.7
IX	67	8.1
X	57	7.2
Total	821	100.0

It will be noted in Table VI that of the 108 students in the first decile who graduated, 22.2 percent did so after having, at one time or another, made records which justified temporarily dropping them from the college or placing them on probation. At the other extreme, decile X, about 56 percent of the group achieved the degree only after experiencing serious difficulty. When we recall that fewer than 50 percent of the total number in decile X graduate, it is apparent that fewer than 25 percent of the beginning group of this decile completed their academic work in an altogether satisfactory manner. Similarly, we may determine from Tables III to VI, inclusive, not only eliminations and survivals, but also the proportion in each decile group who complete their undergraduate courses with or without having at one time or another fallen below the minimum scholastic requirements of their college.

The frequencies of probations and students dropped are presented in detail in Tables VIII to X, inclusive. Inspection of these data will

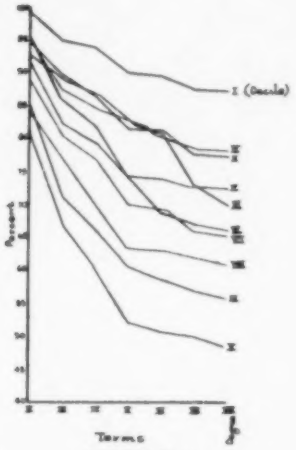

FIGURE I

PERCENTAGE OF STUDENTS REMAINING A GIVEN NUMBER OF TERMS

show that not only are more individuals placed on probation in the lower deciles, but that some of them are repeaters. In the tenth decile, for example, 64 students were placed on probation a total of 101 times. This means, of course, that some of the 64 were in difficulty more than once. It will also be observed (columns 3 and 4) that as the decile rank is higher, the chances of successful completion of the course after probation increase markedly. This fact probably means that the scholastic

TABLE VIII

PROBATION

Decile	Term	1	2	3	4	5	6	7	(1) Total Actions	(2) Individuals on pro.	(3) Degree after pro.	(4) % getting degrees	(5) % of total (Inds.)
	I	4	7	8	2	2	2	2	27	25	22	88	6.3
	II	9	7	6	4	5	2	4	37	27	23	85	6.8
	III	13	7	4	3	7	4	0	38	30	24	80	7.6
	IV	12	7	7	3	2	0	1	32	26	18	69	6.6
	V	18	11	11	6	4	1	1	52	38	23	61	9.6
	VI	16	15	7	5	5	6	3	57	42	27	64	10.6
	VII	23	17	10	1	1	1	0	53	39	25	64	9.8
	VIII	31	19	12	6	3	2	1	74	49	27	55	12.4
	IX	38	23	7	9	1	1	1	80	56	24	43	14.1
	X	46	23	16	9	4	2	1	101	64	30	47	16.2
	Totals	210	136	88	48	34	21	14	551	396	243	63.8	100.0

difficulties of the students in the higher deciles are due very largely to fortuitous circumstances. There is further evidence for this view in Table IX, from which it will be seen that a very appreciable group of probationers in the lower deciles are eventually dropped from their college, whereas in the upper deciles the percentage is small.

TABLE IX

DROPPED AFTER BEING ON PROBATION

Decile	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Number Dropped	4	4	5	6	17	20	18	28	41	50	193
Total on Probation	30	32	38	43	51	58	56	70	85	105	568
% dropped after probation	13.3	12.5	13.2	14.0	33.3	34.5	32.1	40	48.2	47.6	33.9

TABLE X

DROPPED FOR ONE TERM

	Term	1	2	3	4	5	6	7	Total	Degree after drop	% getting degree
	I	1	2	3	2	2	0	0	10	6	60
	II	4	3	0	0	0	2	0	9	5	55
	III	4	4	2	3	1	0	1	15	4	27
	IV	3	5	1	1	1	2	0	13	4	31
Decile	V	5	6	3	2	0	2	0	18	4	22
	VI	5	5	7	2	0	1	0	20	7	35
	VII	5	3	3	2	2	1	0	16	1	6.3
	VIII	11	7	1	3	0	0	0	22	6	27
	IX	13	7	5	2	1	0	0	28	5	18
	X	18	7	4	1	0	0	0	30	2	6.6
	Totals	69	49	29	18	7	8	1	181	44	24.3

Table X demonstrates that the greatest frequencies of very poor records are to be found in the lower deciles, and, further, that there is a marked tendency for those in the lower deciles not to complete the course, whether through failure to return, or because of being dropped permanently at a subsequent time. Certainly the superiority of the first two deciles is clear again in Table X, though there is not a regular direction of change from the third to the tenth decile.

Table XI again shows that the bulk of poor students come from the lower decile ranks.

TABLE XI

DROPPED PERMANENTLY

Decile	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
No.	1	2	4	3	5	7	10	8	13	16	69
% of Total	1.5	2.9	5.8	4.3	7.3	10.1	14.5	11.6	18.8	23.1	100

Turning now to the students of high merit, we find a heavy preponderance in the upper deciles. In fact, in the first decile alone there are more Phi Beta Kappa students and more honor students than in the six lowest deciles combined.

TABLE XII

PHI BETA KAPPA AND HONORS

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
No. P.B.K.	36	21	20	11	8	7	9	2	1	0	115
% P.B.K.	31.3	18.3	17.4	9.6	6.9	6.1	7.8	1.7	.87	0	100
Honors	8	5	2	5	1	2	1	1	1	0	26

Table XIII, though not very significant, again shows the superiority of the highest deciles and the inferiority of the lowest, since of the latter there are many more individuals who were unable to complete the course in the usual eight terms. It is true that extraneous factors, such as illness and economic pressure, might have contributed to the retardation in some cases; but it seems reasonable to assume that these factors are equally significant for all groups.

TABLE XIII

DEGREE IN MORE THAN EIGHT TERMS

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Aid of Summer Sessions	1	6	6	13	14	13	12	20	12	15	112
Extra terms required	3	3	1	2	4	1	1	5	5	5	30
Total	4	9	7	15	18	14	13	25	17	20	142

TABLE XIV

DEGREE IN LESS THAN EIGHT TERMS

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
With aid of Summer Sessions	3	6	13	13	13	8	6	9	5	8	84
Without Summer Sessions	8	9	5	4	4	7	5	2	1	0	45
Total	11	15	18	17	17	15	11	11	6	8	129

Further, Table XIV indicates inferiority of the lower deciles. Though there is no significant trend throughout, the two lowest groups compare unfavorably with the others.

CONCLUSIONS

In the light of the foregoing data and analyses, what may be said regarding the predictive value of mental tests for this and similar groups of students, if the American Council test be representative? In spite

of the low correlations of Table II, it does appear that there is a marked tendency for those students in the higher deciles to achieve better averages, to encounter fewer scholastic difficulties, and to survive a greater number of terms. But it must be admitted that marked though this tendency is, it is not sufficiently marked to warrant the exclusion of a student or a prospective student on the basis of the mental test alone; for, as already indicated, nearly half of those in the lowest decile succeed in completing the full course, although half of this number do so only after great difficulty. Thus, if a student having a decile rank of X were to be excluded on the basis of that rank, the chances would be approximately even that a mistake was or was not being made, as far as completion of the course is concerned. Above the tenth decile, however, the chances of unwarranted exclusions increase rapidly (Fig. I and Table V), for it will be noted that two-thirds of those in even the seventh decile survive the full course.

As already pointed out, these data apply to the group of students here studied, and similar groups, who have had to meet the conditions of their particular college. The students are rather well selected before the mental tests are administered, so that the increased homogeneity of the group no doubt contributes to the test's apparent lack of marked discriminatory power.

On the whole, however, it is reasonable to say that those students of the lowest deciles, say VIII, IX and X, who make poor scholastic records in the early terms are the ones who will in all likelihood fail to complete the full course. They may, therefore, be eliminated early, if for no other reason than for the sake of economy to themselves and to the college.

In each of the first five deciles, however, the percentage surviving is so much greater than fifty, that it is decidedly a good risk to accept students of those ranks. Furthermore, Tables VIII, IX and X in a general way indicate the justification of permitting students in the upper deciles to continue with their courses, even though they might at times have failed to satisfy the minimum scholastic requirements, for the large majority of these students do complete the course. On the same basis those in the lowest deciles are poor risks.

In general, at present we may only say that the mental tests—if the American Council test is typical—are to be used as supplemental information. Exclusion on the basis of decile rank at best presents an equal chance of being right or wrong even in the lowest decile. Of course, if the candidates for admission are far too numerous, selection might be

made on the basis of the tests, in part at least, with the assurance that by eliminating those in the two lowest deciles fewer errors and injustices will be committed than otherwise. But the test of mental capacity is still not closed to infallibility; and the individual still remains unique. We will best understand him by getting his complete picture. To do so, of course, is costly in time, energy, and money. But it seems that psychological practice, in the field of individual differences, if it is to be effective, cannot be through mass study alone; no more so than mass practice of medicine can be effective. If our results are typical, it must be said that the mental tests are inadequate as selective instruments at the college level, just as any other single criterion is inadequate. Yet they have a contribution to make; and on that basis their employment is justifiable.

RELATIONSHIPS BETWEEN THE EXPRESSED PREFERENCES AND THE CURRICULAR ABILITIES OF NINTH GRADE BOYS

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HIGH-SCHOOL administrators and counselors are requested each semester to advise pupils entering the ninth grade in regard to the choice of curricula. One of the first questions usually asked of these pupils is "What do you want to do after the completion of your high-school course?" To be of optimum value, the response to the adviser's request for a statement of primary preference must have a high degree of reliability or permanence and be based upon relatively complete information concerning a wide field of possible vocations. Many high schools are now attempting to supply this latter requirement through exploratory and guidance courses. The reliability of the primary preference, a single choice, will doubtless be increased by such courses, but as Dr. Kitson[1] observed, such preferences are unstable, evolving things, and are not always associated with capacity. It seems, therefore, that not one or two, but many of the pupil's preferences must be investigated to supply an adequate concept of the pupil's inclination and provide the reliability essential to a conclusion on the part of the adviser relative to the preference factor in his recommendation.

Beginning with the work of Kelley[2] a number of studies for the prediction of aptitude have been made that involve a sampling of a wide range of pupil preferences.[3] With the exception of those of Kelley and

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[1] Kitson, Harry D. "Interest in Vocational Guidance." *Educational Review*, LII (November, 1916), 349-56.

[2] Kelley, T. L. "Educational Guidance," *Contributions to Education*, Teachers College, Columbia University, No. 71, 1916.

[3] Pressey, S. L. "A Group Scale for Investigating the Emotions." *Journal of Abnormal and Social Psychology*, XVI (April 1921), 55-64.

Freyd, Max. "The Personalities of the Socially and Mechanically Inclined." *Psychological Monograph*, XXIII, No. 4, 1924.

Moore, B. V. "Some Principles and Practices of Personnel Selection with Special Reference to Graduate Engineers." *Psychological Monographs*, XXX, No. 5, 1922.

Ream, M. J. "Ability to Sell." Williams and Watkins, 1924.

Craig, D. R. "Selecting Retail Saleswomen: The Preference Interest Questionnaire." *Journal of Personnel Research*, IV (February, 1925), 366-374.

Miss Hubbard, however, these studies have concerned themselves with the preferences of college students. The results obtained by Kelley, though significant, are based on the subjective rating of the responses to a questionnaire and the conclusions of Miss Hubbard; that the responses of ninth-grade pupils to a preference questionnaire will not distinguish between the socially and mechanically inclined, is open to criticism. Both are due to the assumption upon which she selected her test groups and the scoring of responses by keys derived from the responses of college students. It appears to the writer that, to be of maximum value, the investigation of curricular inclination should be made at the close of the pupil's elementary or the opening of his secondary training. It is at this point in his educational experience that specialization of subject matter usually begins.

In carrying forward the investigation of the relationships existing between certain expressed preferences of ninth-grade boys and their abilities in academic, commercial, and technical curricula, it was necessary to devise a multi-expression preference questionnaire that would elicit a representative sampling of the preferences of ninth-grade boys relative to various phases of their environment. This questionnaire consisted of 328 items: 65 vocations; 63 activities; 61 things a boy might care to own; 32 magazines; 20 elementary school subjects; 25 qualities that are admired in others; 15 positions in connection with the school paper; 12 prominent men; and 35 activities of parents. Provision was made for the expression of one of three attitudes: like, indifference, or dislike of each item.

This questionnaire was administered to 1582 boys enrolled for the first time in the ninth grades of three public high schools of New York City: 483 boys in DeWitt Clinton High School, 503 boys in the High School of Commerce, and 596 boys in the Brooklyn Technical High School.

In order to obtain some measurement of the relationships existing

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Kornhauser, A. W. "Results from a Questionnaire on Likes and Dislikes Used with a Group of College Freshmen." *Journal of Applied Psychology*, XI (February, 1927), 85-94.

Cowdery, Karl M. "Measurement of Professional Attitudes." *Journal of Personnel Research*, V (August, 1926), 131-141.

Strong, E. K. "An Interest Test for Personnel Managers." *Journal of Personnel Research*, V (September, 1926), 194-203.

Hubbard, Ruth M. "Interests Studied Quantitatively." *Journal of Personnel Research*, IV (January, 1926), 365-378.

Hogg, Mary I. "Occupational Interests of Women." *Journal of Personnel Research*, VI (February, 1928), 331-337.

between prognostic test results and the scores from the preference questionnaire, the following tests were administered to the same pupils whose inclinations were investigated by the preference questionnaire: the Minnesota Paper Form Board and the McQuarrie Test for Mechanical Ability were used for the prediction of technical ability, the Ruggles Diagnostic Clerical Test for the prediction of commercial ability, and the Terman Group Test of Mental Ability for the prediction of academic ability.

The percentage of like responses to the items of the preference questionnaire of one-hundred-fifty pupils from each of the three curricula were obtained. These pupils were selected by lot from those whose achievement was above the average in the subjects[4] which best differentiated the curriculum in which they were enrolled from the other curricula. A key for the indication of technical inclination was then prepared from this data by the techniques employed by Freyd,[5] and Strong,[6] and a third technique by which the weight assigned each response was derived by dividing the difference in the percentage of responses of pupils in the technical curriculum from the percentage of like responses of pupils in the other two curricula by the standard error of that difference.[7] This weight was expressed as the nearest whole number to the quotient obtained. Quotients of less than two were disregarded. Fifty questionnaires not used in the previous tabulation were chosen at random from pupils of above average achievement in the curriculum in which they were enrolled—twenty-five from the Brooklyn Technical High School, 13 from the High School of Commerce, and 12 from the DeWitt Clinton High School, and were scored by each of these keys. Bi-serial r's between the preference score for the indication of technical inclination and enrollment or non-enrollment in the technical curriculum were then computed. The results were as follows: Strong's technique, .738 ± .10, Freyd's technique, .815 ± .083, and the third technique, .820 ± .081. The keys derived by the last mentioned tech-

[4] Academic (DeWitt Clinton); English, Foreign Language, Civics. Commercial (High School of Commerce); Typing, Bookkeeping. Technical (Brooklyn Tech.); Shop, Mechanical Drawing.

[5] Freyd, *op. cit.*

[6] Strong, *op. cit.*

[7] The technique employed by Cowdery, Karl M. "A Measurement of Professional Attitude," *Journal of Personnel Research*, V (August, 1926), 131-141, involved too much effort and statistical skill to be practicable for use by the average high-school administrator or guidance worker.

nique were also prepared for the indication of academic and commercial inclination.

One hundred questionnaires, not used in the preparation of the scoring keys, were chosen by lot from the pupils of the above average achievement in each of the three curricula as indicated by school marks. These questionnaires were scored for technical, commercial, and academic inclination. Coefficients of correlation (bi-serial r's) as shown in the following table, were obtained between the preference scores, both of sub-tests and of the entire questionnaire, and the enrollment or non-enrollment of the pupils in the curriculum for which each of the keys was intended to indicate the presence or absence of an inclination.

TABLE I

CORRELATIONS BETWEEN SCORES OF CURRICULAR PREFERENCE AND ENROLLMENT OR NON-ENROLLMENT IN THE CURRICULUM

Tests	Correlations			
	Commercial	Academic	Technical	Mean
I	.630 ± .046*	.492 ± .046	.578 ± .050	.520
II	.313 ± .064	.149 ± .068	.652 ± .045	.371
III	.335 ± .063	.242 ± .066	.514 ± .054	.364
IV	.203 ± .067	.012 ± .071	.439 ± .058	.218
V	.219 ± .066	.085 ± .069	.323 ± .063	.209
VI	.086 ± .069	.240 ± .066	.391 ± .061	.239
VII	.528 ± .082	.348 ± .090	.622 ± .063	.499
VIII	.262 ± .099	.558 ± .083	.613 ± .066	.477
IXa	.127 ± .068	.304 ± .064	.184 ± .067	.205
IXb	.139 ± .068	.430 ± .059	.190 ± .067	.253
Total Score	.727 ± .039	.560 ± .051	.868 ± .031	

* All errors of the coefficient of correlation are expressed as standard errors in this study.

It will be seen from Table I that the total scores from the preference questionnaire differentiate, more clearly, inclinations toward the more definitely vocational preparatory curricula. The lowest of these correlations, .56, exceeds the relationship, .48, usually found between mental tests and the high-school marks,[8] and the highest approaches very closely the multiple correlations between composites of various factors and the school marks obtained by Kelley,[9] .89; by Flemming,[10], .85; and by

[8] Symonds, P. M. *Measurement in Secondary Education.* The Macmillan Company, 1927, page 406.

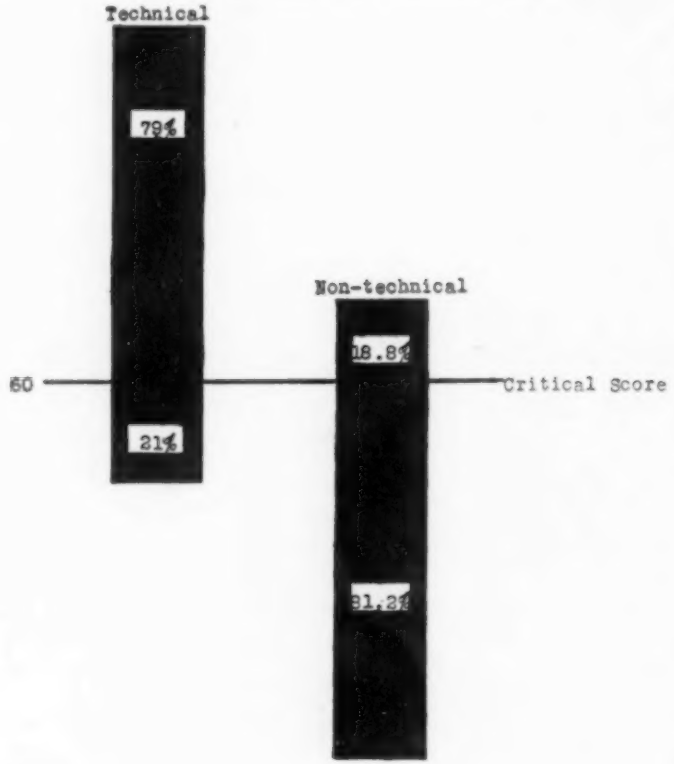
[9] Kelley, T. L. "Educational Guidance: An Experimental Study in the Analysis and Prediction of High-School Pupils." Teachers College Contributions to Education, No. 71. New York: Teachers College, Columbia University, 1914.

[10] Flemming, C. W. "A Detailed Analysis of Achievement in the High School; The Comparative Significance of Certain Mental, Physical, and Character Traits for Success." Teachers College Contributions to Education, No. 196. New York: Teachers College, Columbia University, 1926.

Clem[11] in predicting success in Latin, .84. It seems, therefore, that the preference questionnaire is an instrument well adapted to the investigation of the inclinations of pupils regarding the curriculum they should elect. It may be well to remark here that a very decided preference for one type of activity does not necessarily mean that the pupil will be more successful in this activity than another who indicates this preference to a less degree. A decided preference probably does indicate, however,

FIGURE I

PERCENTAGE OF OVERLAPPING BETWEEN THE SCORES OF PUPILS ENROLLED IN THE TECHNICAL AND NON-TECHNICAL CURRICULA



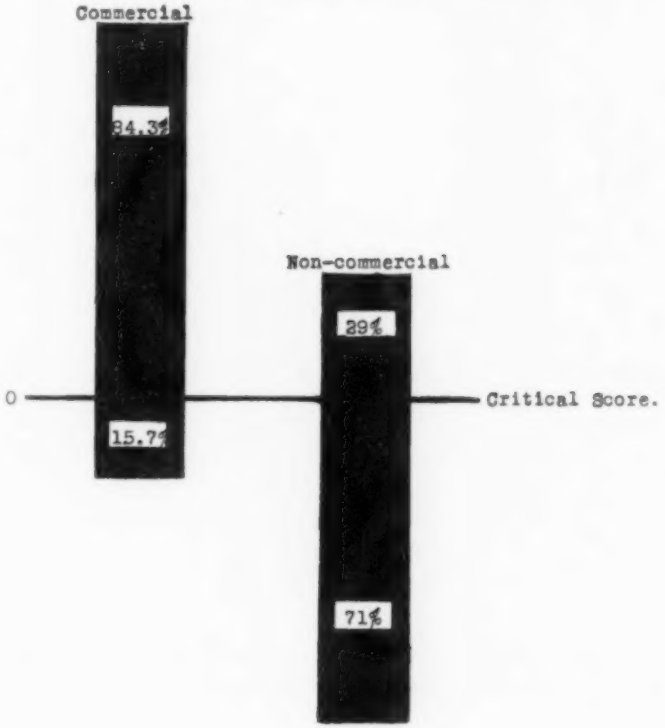
[11] Clem, O. M. "Detailed Factors in Latin Prognosis." Teachers College Contributions to Education, No. 144. New York: Teachers College, Columbia University, 1924.

the field of activity in which the pupil will find the greatest happiness and contentment and in which he may achieve as much or, possibly, more success than in other fields.

It may also be noted that questionnaire items that involve responses indicating attitudes toward various vocations seem to differentiate best between the curricula. In order of importance, as means of differentiating between the curricular groups, the tests rank as follows: Test 1, Occupations; Test 7, Positions on School Paper; Test 8, Prominent Men; Test 2, Activities; Test 3, Things to Own; Test 9b, Activities of Mother; Test 6, Qualities Admired in Others; Test 4, Magazines; Test 5, Elementary School Subjects; Test 9a, Activities of Father. Items of the type incorporated in Test 7 seem to offer considerable promise, and the

FIGURE II

PERCENTAGE OF OVERLAPPING BETWEEN THE SCORES OF PUPILS ENROLLED IN THE COMMERCIAL AND NON-COMMERCIAL CURRICULA

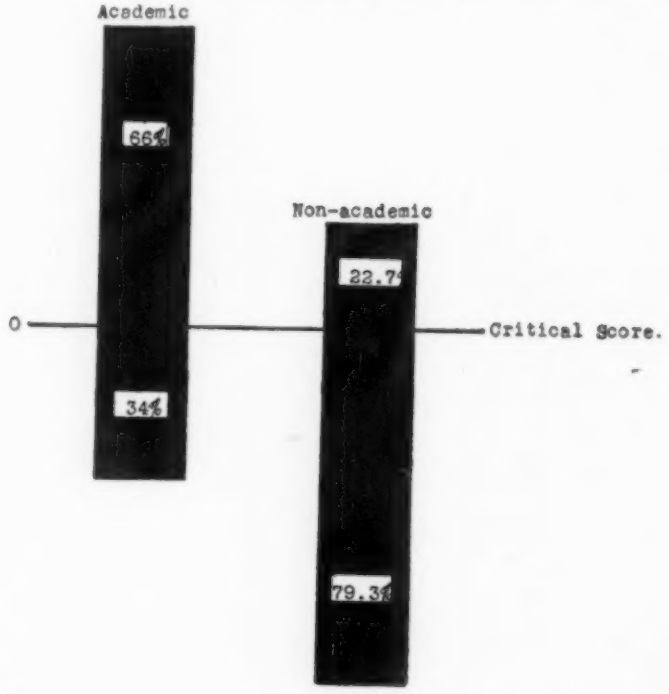


length of this test should be expanded in future revisions of the questionnaire.

The practicability of the use of arbitrary critical scores for distinguishing between pupils of commercial, academic, or technical inclination was investigated. A comparison was made between the percentage of successful pupils[12] enrolled in each curriculum whose preference scores were greater than the critical score chosen and the percentage of successful pupils in other curricula whose preference scores were greater than that critical score. It will be seen, Figures I, II, III, that by a comparison with an arbitrarily chosen critical score we have

FIGURE III

PERCENTAGE OF OVERLAPPING BETWEEN THE SCORES OF PUPILS ENROLLED IN THE ACADEMIC AND NON-ACADEMIC CURRICULA



[12] Success was determined on the basis of school marks in those subjects which were thought to best differentiate the curriculum in which the pupil was enrolled from the other curricula.

an overlapping of but 19.5 percent[13] between the scores for the indication of technical inclination of pupils of the technical curriculum and the non-technical curricula. Figure II shows an overlapping of 24.5 percent between the scores for the indication of commercial inclination of pupils from the commercial curriculum and non-commercial curricula, and Figure III an overlapping of 26.4 percent between the scores from the academic curriculum and the non-academic curricula.

Coefficients of correlation between school marks and the preference scores for the indication of inclination and also between prognostic test scores and the preference scores for the indication of curricular inclination (Table II), seem to indicate that little relationship exists between the curricular inclinations as shown by the responses to the preference questionnaire and ability in the curricula as indicated by the results of these objective tests. It seems probable, however, that the attitude reflected by preference scores toward a curriculum does, to a slight degree, affect the school marks received in those subjects which most clearly differentiate that curriculum from the other curricula.

TABLE II

CORRELATIONS BETWEEN MEASURES OF CURRICULAR ABILITY AND SCORES FOR THE INDICATION OF PREFERENCE FOR THE COMMERCIAL, ACADEMIC, AND TECHNICAL CURRICULA

Factors correlated	Correlations		
	Commercial	Academic	Technical
Preference scores and school marks	.034 ± .057	.146 ± .056	.286 ± .052
Preference scores and Terman scores	—.266 ± .054	.046 ± .057	—.006 ± .057
Preference scores and Minnesota scores	—.152 ± .056	.001 ± .057	.190 ± .055
Preference scores and McQuarrie scores	—.045 ± .057	—.304 ± .052	.029 ± .057
Preference scores and Ruggles scores	—.015 ± .057	.150 ± .056	—.043 ± .057

The coefficients of reliability[14] of the questionnaire as obtained from total scores of the odd and even numbered responses of seventy-five questionnaires, twenty-five from each curricular group, chosen at random from the three hundred previously scored, were, when scored by the key for the indication of technical inclination, .953; when scored for com-

[13] It should be remembered that the percentages for non-technical, non-academic, and non-commercial pupils are based on twice as many cases as the percentages for technical, academic, and commercial pupils.

[14] Spearman-Brown formula.

mercial inclination, were .925, and when scored for academic inclination, were .861.

In conclusion, it may be said that the preference questionnaire offers an instrument of reasonably satisfactory validity, .868, .727, and .560, and reliability, .953, .925, and .861, for the use of guidance workers in the determination of curricular inclination. It does not appear, however, that this instrument can be profitably employed in the prediction of the degree of success that will be achieved by the pupil within the field of his chosen activity. The chief value of the multi-expression preference questionnaire to those charged with the responsibility of advising pupils entering the secondary school regarding their educational and vocational careers comes through the supplying of reasonably valid and reliable information regarding the inclinations of pupils. In other words, the results of the preference questionnaire should, in the hands of advisers of pupils, do much to prevent the election of a curriculum for which the pupil is not fitted by inclination and thereby reduce the number of failures, the loss of time involved in the change of curricula, and the withdrawals from school occasioned by curricular maladjustment. This thought may be simply expressed as the prevention of the placement of "square pegs in round roles."

CHANGING TENDENCIES IN EDUCATIONAL RESEARCH

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ALTHOUGH educational research has been changing its scope and method significantly for a number of years, the extent to which it differs from that of a quarter of a century ago has been difficult to determine.

Theisen[1] appears to be one of the first to study the amount and character of research in education. In his study it was noted that the testing movement received the greatest share of the research worker's attention and that the statistical techniques used at that time held a prominent position. Woody[2] in analyzing ten well-known periodicals, several books, bulletins, and monographs for the year 1923, noted the number of articles and pages devoted to the different types of research for that year. These types included research in administration, instruction, educational and mental tests, statistical methods, and experimental studies. Ashbaugh[3] made a bibliography of research articles published in 1924, which formed the basis for the presidential address at the Educational Research Association held at Cincinnati in 1925. More recently Trabue[4] studied the amount and character of educational research produced in periodicals for the year 1925. He combined the results of his investigation with those of Ashbaugh and then made a comparison of the two years. Three hundred and forty-nine articles were examined for the year 1924 and two hundred seventy-seven for the year 1925. In this survey thirty-two educational periodicals were used.

It will be noted that the studies which have been made only covered from one to two years. This paper is an attempt to analyze the character and amount of scientific research in education for a period of forty years, as found in representative educational periodicals, and by such

[1] Theisen, W. W. "Recent Progress in Educational Research." *Journal of Educational Research*, VIII (1923), pp. 301-314.

[2] Woody, Clifford. "Survey of Educational Research in 1923." *Journal of Educational Research*, IX (1924), pp. 357-381.

[3] Ashbaugh, E. J. "Bibliography of Research Articles Published in 1924." *Journal of Educational Research*, II (1928), pp. 368-379.

[4] Trabue, M. R. "Educational Research in 1925." *Journal of Educational Research*, XIII (1926), pp. 336-344.

examination to note some general tendencies in educational practise and methodology. The investigation involves the analysis of 2,837 articles from 13 educational periodicals listed according to decennial periods, as follows: 1890-1899—49 articles; 1900-1909—106 articles; 1910-1919—682 articles; and 1920-1929—2000 articles; representing a total of 32,109 pages. Two terms should be carefully noted, "scientific" and "representative." Articles to receive consideration in this investigation had to conform to the following six criteria:[5] 1. approached from an inductive standpoint; 2. definite objective; 3. clearly defined techniques; 4. limited to a special field; 5. material organized in systematic arrangement; and 6. definite conclusions warranted by the assembled data. Not all of the published articles could meet the criteria established for the investigation. Theoretical or controversial papers were omitted. In selecting periodicals for source data, the list has been restricted to those of general distribution among educators. The factors considered in selecting periodicals for the survey were: 1. representativeness of educational content and thought, 2. general distribution, 3. type of material presented, and 4. popularity among educators. Several of the periodicals have been in existence less than forty years.

The following 13 educational periodicals were used: 1. Education; 2. Educational Review; 3. Elementary School Journal (formerly Elementary School Teacher); 4. Journal of Educational Administration and Supervision; 5. Journal of Educational Method; 6. Journal of Educational Psychology; 7. Journal of Educational Research; 8. Journal of the National Education Association; 9. North Central Association Quarterly; 10. Pedagogical Seminary (now Journal of Genetic Psychology); 11. School and Society; 12. School Review; and 13. Teachers College Record.

The findings are presented according to the amount of scientific research produced with regard to (1) methods and techniques employed; (2) the various levels of education; (3) the several fields of education.

THE METHODS AND TECHNIQUES OF RESEARCH

The results begin with Table I, which gives the distribution of the amount of research produced according to methods and decennial periods.

[5] Freeman, E. M. "Criteria for Judging a Science of Education." *School and Society*, XXX (1929), pp. 48-52.
Jones, Arthur J. "The Superintendent of Schools and Research." *School Review*, XV (1929), pp. 81-92.

In the analysis of data collected for this study, the classification presented by Good[6] has been used, with the possible exception of the philosophical method. Many writers do not believe there is or should be a philosophical method of research in education; articles recently published in educational periodicals, however, lead one to believe that there is a widespread conviction among educators that the philosophical element in education should receive more attention and that a scientific method[7] for philosophical research is likely possible. In a number of instances there was more than one method used in a given piece of research. In making the distribution, the number of times the method occurred was considered irrespective of the number of articles.

From Table I and Figure I, a number of observations may be made, such as: (1) the comparatively small amount of research using the historical, legal, comparative survey and case study methods. This is true of all year-periods. (2) The relatively large number of articles which used the questionnaire, correspondence and interview methods, during the first two periods (1890-1899 and 1900-1909). A marked decline of these methods is noted during the last two periods. Questionnaire methods of gathering data were among the first used in the study of education. This tendency to use questionnaire methods was particularly true among the early investigations in the field of genetic psychology, and they still hold a prominent place, although their reliability as methods of obtaining data have been questioned by a number of investigators. (3) The marked increase of statistical method from 1910 to the present time. The use of statistical techniques is growing and much may be said on both the credit and debit side for it. There are those who are well trained in the statistical devices, who in the proper utilization of them have been able to arrive at more exact truths; also, those who apparently feel that it is not of considerable importance to ascertain sufficient numbers of cases, to take into account the representativeness of the data collected, or to see the pitfalls accruing to certain computations and for their various interpretations. The conclusions of many statistical research studies are unwarranted by the data at hand. (4) The rapid rise of experimental techniques from 1910 to 1920, with

[6] Good, Carter V. *How to Do Research in Education.* Baltimore: Warwick and York, 1928.

[7] Clugston, H. A., and Davis, R. A. "Is a Scientific Method Possible for Philosophical Research in Education?" *Journal of Administration and Supervision.* April, 1930.

TABLE I

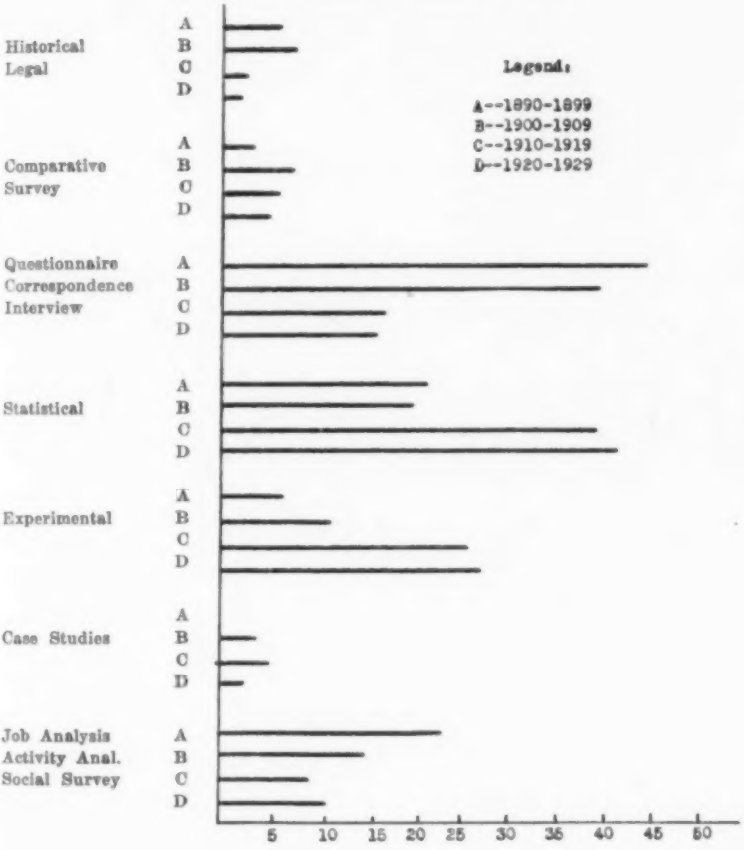
DISTRIBUTION OF THE AMOUNT OF RESEARCH PRODUCED ACCORDING TO METHODS AND DECENNIAL PERIODS

METHOD	1890-1899				1900-1909				1910-1919				1920-1929				Totals			
	Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Historical—Legal	2	4.08	22	1.71	7	6.48	69	2.79	11	1.61	223	2.45	17	.85	154	.80	37	1.30	468	1.45
Comparative—Survey	1	2.04	42	3.27	8	7.41	117	4.73	35	5.11	588	6.47	88	4.38	774	4.00	132	4.63	1521	4.73
Questionnaire—Correspondence—Interview	22	44.90	578	44.98	42	38.89	1058	42.75	109	15.90	1442	15.86	303	15.06	2988	15.86	476	16.69	6066	18.85
Statistical	10	20.41	236	18.37	21	19.44	535	21.62	271	39.56	3215	35.37	852	42.37	7798	40.34	1154	40.44	11784	36.62
Experimental	3	6.12	53	4.12	12	11.11	331	13.37	185	27.02	2374	26.32	514	25.56	4932	25.11	714	25.02	7690	23.89
Case—Studies					3	2.78	67	2.70	25	3.65	527	5.80	31	1.54	382	1.98	59	2.07	976	3.03
Job Analysis—Activity Analysis—Social Survey	11	22.45	354	27.55	15	13.89	298	12.04	49	7.15	721	7.73	206	10.24	2305	11.92	281	9.85	3678	11.43
Totals	49	100	1285	100	108	100	2475	100	685	100	9090	100	2011	100	19333	100	2853	100	32183	100

some decrease from 1920 to 1929. This decline during the last period is probably due to the influence of the testing movement. This movement has furnished investigators with valuable tools for experimentation, and has made research easier to prosecute with statistical methods. Since tests and measurements have been so extensively used for research, it

FIGURE I

DISTRIBUTION OF THE AMOUNT OF RESEARCH PRODUCED ACCORDING TO METHODS AND DECENNIAL PERIODS



is expected that experimental methods will show a perceptible increase in the future. Educational and intelligence tests have enabled investigators to produce research with unusual rapidity; a majority of the

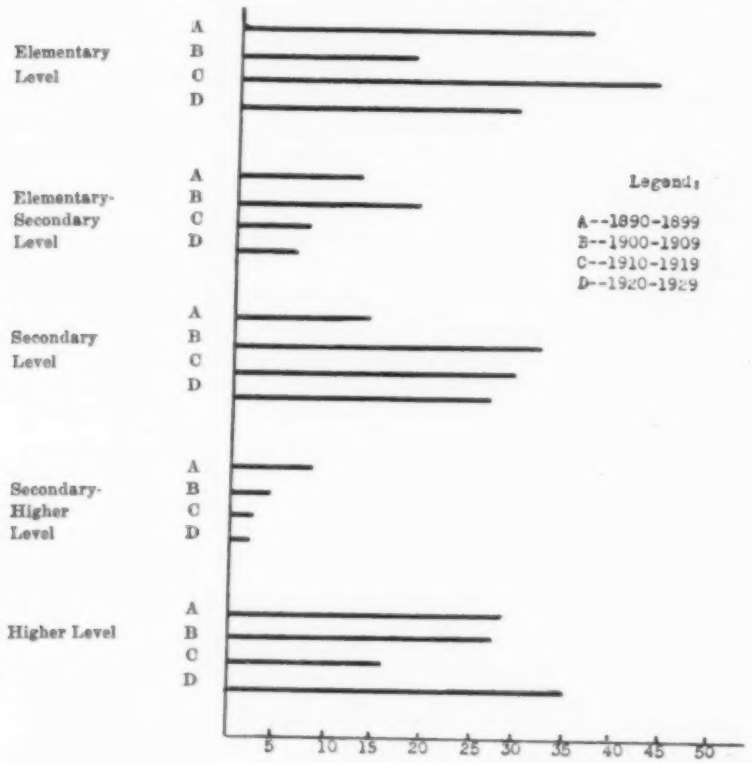
studies, however, appear to be statistical rather than experimental in nature. And finally, (5) job analysis, activity analysis, and social surveys maintain a significant position during the first two periods, showing some decline during the latter two periods.

RESEARCH IN THE VARIOUS LEVELS OF EDUCATION

In this section is presented the research produced according to the levels of the school system. The content of educational research was classified according to the five divisions as proposed by Trabue.[8] Many

FIGURE II

DISTRIBUTION OF THE AMOUNT OF RESEARCH PRODUCED IN THE VARIOUS LEVELS OF EDUCATION ACCORDING TO DECENNIAL PERIODS



[8] Trabue, M. R. *op. cit.*

TABLE II

DISTRIBUTION OF THE AMOUNT OF RESEARCH PRODUCED IN THE VARIOUS LEVELS OF EDUCATION ACCORDING TO DECENNIAL PERIODS

LEVEL	1890–1899				1900–1909				1910–1919				1920–1929				Totals			
	Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Elementary	18	36.73	506	39.38	19	17.93	577	23.50	298	43.70	4396	48.53	597	29.85	6294	32.59	932	32.85	11773	36.67
Elementary-Secondary	6	12.25	176	13.70	20	18.86	529	21.55	53	7.77	817	9.02	124	6.2	817	4.23	203	7.16	2339	7.28
Secondary	7	14.29	168	13.07	33	31.13	505	20.57	196	28.74	2283	25.20	520	26.0	4935	25.56	756	26.65	7891	24.58
Secondary—Higher	4	8.16	104	8.09	5	4.72	174	7.09	14	2.05	179	1.98	44	2.2	415	2.15	67	2.36	872	2.72
Higher	14	28.57	331	25.76	29	27.36	670	27.29	121	17.74	1383	15.27	715	35.75	6850	35.47	879	30.98	9234	28.75
Totals	49	100	1285	100	106	100	2455	100	682	100	9058	100	2000	100	19311	100	2837	100	32109	100

of the headings overlap and probably no method of classification would be entirely satisfactory. The method employed was that of noting the number of articles and pages devoted to the various levels.

Table II and Figure II indicate that research was greatest in the elementary level from 1890 to 1899 with higher education taking a secondary place. From 1900-1909 the largest amount of research was made on the secondary school level, with higher education following closely. In the period from 1910-1919, as in the case of 1890 to 1899, research on the elementary level is predominant. From 1920 to 1929 the major interest is evidenced in higher education. From the facts presented, it may be observed that: (1) research in elementary education has held a conspicuous position from 1890 to the present time; (2) there is a comparatively small amount of research on the elementary-secondary level irrespective of year-periods, the greater amount of emphasis having been placed on the secondary level rather than on the combination, elementary and secondary; (3) the negligible amount of research on the secondary-higher level; and (4) the relatively great amount of research devoted to higher education throughout the four periods.

RESEARCH IN THE FIELDS OF EDUCATION

This section deals with the growth of research in the various fields of education and the results are given in Table III. In the determination of fields the classification below was followed.

1. Administration; including school costs, equipment and facilities, discipline, relationship between superintendent and teachers, retardation, acceleration, promotion of pupils, etc.

2. Curriculum and course of study; embracing studies which attempt to evaluate, reconstruct and reorganize the curriculum.

3. Methods and supervision; covering investigations which attempt to evaluate certain practises and devices for teaching in the classroom, supervised study, supervision of school systems, grades and subjects.

4. Child psychology; studies which deal principally with development, physical and mental, emotional, social and moral reactions, particularly as they apply to children and early adolescents.

5. Educational psychology; it was found necessary to make a rather clear-cut distinction between educational psychology and child psychology. Under educational psychology have been included such topics as learning and those factors which influence it, including motivation, incentives, attitudes, reception of stimuli, transfer of training, attention,

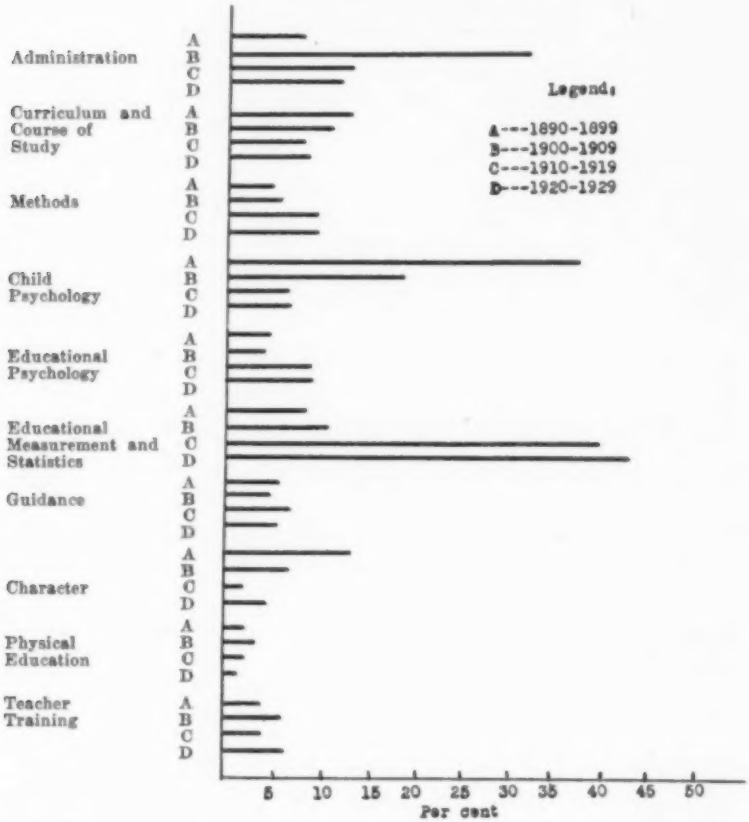
TABLE III

DISTRIBUTION OF THE AMOUNT OF RESEARCH PRODUCED IN THE VARIOUS FIELDS OF EDUCATION ACCORDING TO DECENNIAL PERIODS

FIELD	1890–1899				1900–1909				1910–1919				1920–1929				Totals			
	Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages		Articles		Pages	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Administration	4	8.16	102	7.94	33	31.13	846	34.46	83	12.17	1051	11.60	233	11.65	1991	10.32	353	12.44	3990	12.43
Curriculum and Course of Study	6	12.24	122	9.49	11	10.38	168	6.84	54	7.92	841	9.29	161	8.05	1642	8.50	232	8.18	2773	8.64
Methods	2	4.08	33	2.57	7	6.60	78	3.18	67	9.82	924	10.20	189	9.45	1728	8.95	265	9.34	2763	8.61
Child-Psychology	19	38.77	643	50.04	19	17.93	610	24.85	37	5.43	693	7.65	102	5.10	1321	6.84	177	6.24	3267	10.17
Educational Psychology	2	4.08	37	2.88	4	3.77	45	1.83	67	9.82	862	9.52	140	7.00	1572	8.14	213	7.51	2516	7.84
Educational Measurement and Statistics	4	8.16	96	7.47	11	10.38	263	10.71	278	40.76	3491	38.54	844	42.20	8120	42.03	1137	40.08	11970	37.28
Guidance	3	6.15	32	2.49	5	4.72	71	2.89	45	6.60	472	5.21	119	5.95	907	4.70	172	6.06	1482	4.60
Character	6	12.24	180	14.01	7	6.60	175	7.13	12	1.76	178	1.97	72	3.60	735	3.81	97	3.42	1268	3.95
Physical Education	1	2.04	10	.78	3	2.83	81	3.30	8	1.18	138	1.52	15	.75	83	.43	27	.95	312	.97
Teacher Training	2	4.08	30	2.33	6	5.66	118	4.81	31	4.54	403	4.50	125	6.25	1212	6.28	164	5.78	1768	5.51
Totals	49	100	1285	100	106	100	2455	100	682	100	9058	100	2000	100	19311	100	2837	100	32109	100

FIGURE III

DISTRIBUTION OF RESEARCH PRODUCED IN THE VARIOUS FIELDS OF EDUCATION ACCORDING TO DECENNIAL PERIODS



interest, effort. etc. In other words, those articles which deal principally with the learning situation have received greatest consideration.

6. Educational measurement and statistics; embodying studies of educational and intelligence tests, classification, diagnosis and promotion of pupils, which make use of the common statistical techniques.

7. Guidance; studies which deal with occupational choice, subject choice, after-school careers, and such predictive factors as intelligence, school marks, etc.

8. Character; incorporating studies pertaining to methods of measuring character, character programs, character ratings, etc.

9. Physical education; investigations dealing with health, sensory defects, athletics, physical training programs, etc.

10. Teacher training; taking into account articles which deal with teacher-training programs, factors affecting teacher success, teacher rating, teacher improvement in service, summer school attendance and degrees in education.

The results obtained from this phase of the investigation show the following conditions: (1) a relatively large amount of emphasis has been given to administration, child psychology, educational measurements and statistics; (2) child psychology has held its most prominent position from 1890 to 1899; educational administration from 1900 to 1909; educational measurements and statistics from 1910 to the present time, showing an increase from 1920 to 1929.

METHODS, LEVELS, AND FIELDS ARRANGED IN ORDER OF IMPORTANCE ACCORDING TO DECENNIAL PERIODS

To throw further light on the changing tendencies in educational research, the methods of research, levels and fields of education have been arranged in the order of their importance as determined by the percentage of total articles for each. Since it was found that the relation between the percentage of articles and the percentage of pages was very close, the ranking is based on articles alone. The topics are ranked according to the comparative percentage of space allotted to them.

A COMPARATIVE AND TOTAL ANALYSIS OF THE METHODS OF RESEARCH, LEVELS AND FIELDS OF EDUCATION

1890-1899 (inclusive)

Methods	*Levels*	*Fields*	*Order*
Quest. Corr. Inter.	Elementary	Child Psychology	1
Job and Activity An.	Higher	* Curriculum and Course Study	2
Statistical	Secondary	* Character	3
Experimental	Elem.-Secondary	* Ed. Meas. and Statistics	4
Historical and Legal	Secondary-Higher	* Administration	5
Comparative Survey		Guidance	6
Case Studies		Methods	7
		* Teacher Training	8
		* Educational Psychology	9
		Physical Education	10

1900-1909 (inclusive)

Quest. Corr. Inter.	Secondary	Administration	1
Statistical	Higher	Child Psychology	2
Job and Activity An.	Elem.-Secondary	* Ed. Meas. and Statistics	3
Experimental	Elementary	* Curriculum and Course Study	4
Comparative Survey	Secondary-Higher	* Methods	5
Historical-Legal		* Character	6
Case Studies		Teacher Training	7
		Guidance	8
		Educational Psychology	9
		Physical Education	10

* Those within brackets are of equal importance.

1910-1919 (inclusive)

Methods	*Levels*	*Fields*	*Order*
Statistical	Elementary	Ed. Meas. and Statistics	1
Experimental	Secondary	Administration	2
Quest. Corr. & Inter.	Higher	Methods	3
Job and Activity An.	Elem.-Secondary	Educational Psychology	4
Comparative Survey	Secondary-Higher	Curriculum & Course of Study	5
Case Studies		Guidance	6
Historical-Legal		Child Psychology	7
		Teacher Training	8
		Character	9
		Physical Education	10

1920-1929 (inclusive)

Statistical	Higher	Ed. Meas. & Statistics	1
Experimental	Elementary	Administration	2
Quest. Corr. & Inter.	Secondary	Methods	3
Job & Activity An.	Elem.-Secondary	Curr. and Course of Study	4
Comparative Survey	Secondary-Higher	Educational Psychology	5
Case Studies		Teacher Training	6
Historical-Legal		Guidance	7
		Child Psychology	8
		Character	9
		Physical Education	10

GENERAL CONCLUSIONS

The purpose of this paper was to analyze research articles from representative periodicals in education, to study the trends and determine the lines along which education is now being formulated. A few implications may be outlined.

1. The amount of educational research (as indicated by the expansion of articles) has shown a very marked development during the past forty years, the most marked expansion coming during the later periods.

2. Research methods in education have shown an increased use. The greatest increase has been in the use of statistics, which was most marked in the last two decades. Experimental methods are coming to be more important as devices for use in the solution of educational problems. The questionnaire method experienced its greatest popularity in the early decades. Case study methods are comparatively rare for all year-periods.

3. Each level of education shows an increase in the amount of educational research produced over the forty-year period. The level of higher education shows the greatest increase in research for the last decade. Of the total research, irrespective of periods, the elementary level has been considered the most important by research workers. This is probably the most important level for research purposes and with the increased

emphasis upon pre-school and early childhood training it is to be anticipated that investigations on this level will continue unabated.

4. The fields of educational measurement and statistics have contributed the greatest amount of research in recent years. Little research in the field of physical education is reported in the magazines examined. Child psychology had a conspicuous place in research during the early periods. Research in the field of guidance is becoming more attractive as a field of study.

SOME IMPLICATIONS

The study calls attention to the need of more research and study of this same nature. Those who guide students in the writing of theses and in the development of research projects should know the character and amount of research produced in the various fields and levels of education and the techniques employed in their solution.

Further studies of this type should include an examination of the studies reported in periodicals to determine the number of cases used. It is quite commonly agreed that many research studies fail in their effectiveness because of the small number of subjects employed; this is especially true of some types of investigations. Another interesting project would be to determine the most frequently used statistical devices employed by research workers in the solution of problems. Teachers of the methods of research should know the important statistical techniques used in educational investigations and take these into account in the construction of their courses and in the guidance offered students.

RESEARCH AND THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION

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Standards for the dissertation leading to the Doctor's degree are affected by two groups of considerations. The first group of considerations may be described as limitations under which the candidate works when he prepares his dissertation. The second group of considerations has to do with the relations of research to the duties of the candidate when he enters upon a permanent position.

Four of the limitations affecting the candidate when he is working on his dissertation are worthy of special notice, namely, (1) the short period of time available for graduate study, (2) the cost of carrying on a comprehensive piece of research, (3) the limited professional training of the student at the time he must select the subject for his dissertation, and (4) the lack of mastery of the techniques which the student must use in his research. In order to obtain evidence showing the extent to which these limitations affect the work of students, statements of fact were secured from 174 persons who received their doctoral degrees in education during the years 1927 and 1928. The persons from whom statements were secured had taken their degrees in thirteen major institutions all of recognized standing.

The amount of time actually employed in preparing the dissertation was indicated in the replies of 165 of the 174 doctors in answer to the question "How much time elapsed between the approval of the thesis subject and the final acceptance of the complete dissertation by the faculty?" Since this period includes the time which the faculty used in passing upon the theses, the replies may be considered as over-statements rather than under-statements. The time spent in preparing theses varied greatly in different cases. One man completed his thesis in five months, while another required twenty years to finish his. Grouping the data, the results are as follows: 25 percent completed their theses from five to twelve months; 49 percent from 13 to 24 months; 13 percent from 25 to 36 months, while the remaining 13 percent required over 36 months. The fact that 74 percent of these doctors completed their dissertations during the short period of two years or less is more significant when it is noted in addition that many of them found it necessary to carry on their research while holding a full-time position.

rather than while studying. Of the 174 doctors reporting, only 35 percent were able to do all of the work on their dissertations while in residence. Seventeen percent completed part of their dissertations in residence and part while employed outside the institution, while 48 percent of the students prepared their dissertations while holding full-time positions. The difficulty of devoting oneself intensively to research while holding a full-time position needs no comment. Research under such conditions must be carried on in addition to a fulltime working load, while for students in residence the research constitutes a major part of the candidate's regular work rather than an extraneous addition to it. The effect of these limitations in the amount of time available for research is that the student must either select a minor problem which can be carried to satisfactory completion within a relatively short period of time, or he must submit a thesis which lacks the characteristics of a comprehensive and verified study.

A second limitation affecting the work of the candidate for the doctor's degree is the expense of carrying on research. It is true that in some cases institutional funds are available to subsidize the investigation, but one cannot fail to notice that in numerous cases students avoid one type of research and select another because of the difference in expense. A tabulation of the total cost of the dissertation, exclusive of publication, for 136 students shows a median cost of 320 dollars. Twenty-five percent of the theses cost less than 124 dollars, while the upper 25 percent cost more than 542 dollars. Eleven of the 136 theses involved an expense of more than 1600 dollars. While the cost of preparing a dissertation may bear no relationship whatever to its value, nevertheless certain types of investigation are far more expensive than other types. For example, a student may be able to carry on an historical study or a documentary analysis with scarcely any expense in addition to his own time, since all the materials which he needs are furnished by the library. On the other hand, certain types of administrative studies which require the collection of large bodies of data, or certain types of laboratory investigations which require expensive equipment and supplies, involve such high total costs that unless a subsidy is available the ordinary student is entirely unable to undertake such projects.

The third limitation on the work of the candidate for the doctor's degree is his limited professional training at the time he must select his thesis subject. This limited training often results in a poor selection. A problem which is trivial, isolated, or not subject to precise, objective

treatment is hastily chosen. Policies of institutions differ in regard to the help given a student in finding a problem. Of the 174 students from whom data were received, 63 percent report that they selected their problem independently; 20 percent report that the subject was proposed by a member of the faculty; 14 percent that the subject grew out of a joint conference with faculty members, while in 3 percent of the cases the subject was suggested by some person not a member of the faculty. In order to have as much time as possible to devote to a thesis, it is desirable that a student select his problem early in the second year of his graduate work. This means that the problem for the thesis is selected when the student has only the ability of a Master of Arts. While the selection of a poor problem may be prevented by careful criticism of the proposed subject by the faculty, the fact remains that the limited perspective of the student at the time he must begin his research frequently results in the selection of a problem which would have been avoided had the student been more mature. Some plan needs to be devised to help a student select a problem which is fundamental and worthwhile and which at the same time may be brought to a satisfactory completion within the limited time and limited means available to the student.

The fourth of the limitations to be mentioned here is the fact that the candidate is not able to master fully the necessary techniques of investigation before he must actually engage in the major phases of his research. In fact, the dissertation is frequently the very means by which the student attains mastery of a technique, although in some institutions the thesis for the Master's degree affords this preliminary training. There is, furthermore, the fact that the techniques of research are of a very uneven difficulty, and that students who are more anxious for the degree than for the training involved may select a technique simply because it is easy and may be applied quickly. The difficulty of laboratory techniques probably accounts in part for the small number of laboratory theses.

To summarize the previous paragraphs, it must be admitted that standards for the Doctor's dissertation are affected by the short period of time available to students, by the limited expense which students can afford, by the fact that they are immature when they select their problem and may not select wisely, and by the fact that the student usually learns the technique which he uses as he proceeds with his investigation. In view of these limitations two conclusions may be reached. On the

one hand, one may say that really good research is seldom possible and that it would be wiser to accept for the degree some other form of exercise from students who are seriously affected by the limitations mentioned. On the other hand, one may take the position that if the standards for research for the doctor's degree are modified there remains no guarantee that institutions will stimulate that type of productive scholarship among their students which is necessary for the expansion of knowledge and that the limitations described should be met by some plan which will enable students to overcome them. If this second position is taken any modifications in the requirements for the doctor's dissertation in education should be in the direction of more rigid training in research.

Certain suggestions may be made for meeting the limitations described and at the same time maintaining high standards for the doctor's dissertation. First, an earlier selection of the problem may be suggested. If the problem can be chosen by the end of the first year of graduate work, more time will be available for presenting a finished dissertation. Second, more careful supervision of the selection of the problem by the faculty may be insisted upon. This may offset the possible disadvantage of having to select a problem early and should prevent the choice of some of the unproductive subjects which are occasionally selected. Third, one might suggest greater coördination of research projects. If the doctor's dissertations which are presented year by year could be coördinated around the major problems of the various fields of education, the students would not only have the advantage of dealing with genuinely worth-while subjects, but the profession as a whole would derive enormous benefit from the combined results of related research. This suggestion does not involve the notion that a faculty member should use candidates for the doctor's degree in carrying out some routine investigations which relate to some major project of his own, but rather that the faculty member and the candidate should together see the several stages of research needed in solving some of the fundamental problems of education and that intelligent allocation of research would eventuate in some major achievement. The idea which the writer has can be described better by the term "coördinated research" than by the term "coöperative research." A fourth suggestion is that the departments of education might devote more time to informal but critical courses dealing with the techniques of research at the time candidates are making their selection of problems. A critical study of the techniques of research would do

much to offset lack of experience with the techniques used in the doctor's investigation. A fifth suggestion is that institutions attempt to provide subsidies for important and desirable types of research which are too expensive to be undertaken by an individual student.

In the first paragraph of this paper the statement was made that the standards for doctor's dissertations are affected by two groups of considerations. The second group relates to the fact that the candidate's work is influenced by the duties or activities which he is expected to perform when he enters a permanent position.

No one denies that rigid training in research should be given those who expect to enter permanent research work, but many persons question the value of training in research for the future teacher or administrator. It is suggested that a sharp distinction be drawn between the work of the practitioner and that of the research worker. Frequent reference is made to the practices in certain medical schools, where the M.D. degree is given as a practitioner's degree, but where the Ph.D. is conferred on the research student and the analogy between medical training and training in education is emphasized. The analogy between medicine and education, however, is by no means perfect. The practitioners in education are the great group of teachers below the Ph.D. level, most of whom have had no graduate work at all. No one is proposing training in research for this group, nor are we concerned here with it. The essential question is whether for that small group in the educational profession which attains its highest degree, the Ph.D., anything less than rigid training in research is admissible. The writer cannot concede that any of those who receive the Ph.D. degree should be thought of as mere practitioners, regardless of the type of position they hold. For example, the superintendent of schools in a small town may have no graduate training whatever. His job is to "run" the schools, but he is entirely dependent on others to tell him how they should be "run." His is, for the most part, a job of routine application of well-formulated practices of conducting schools. He seldom takes a critical attitude toward the practices or seldom attempts to discover better practices except insofar as his own local situation requires minor variations. On the other hand, a superintendent of schools with a Ph.D. is not engrossed primarily with the routine matters of administration, most of which can be delegated to subordinates. He is expected to be able to participate in solving the new and larger problems of administration; his duty is not so much to "run" the schools as to find out how they should be "run." One may

have doubts as to the ability of some doctors who are superintendents to perform these higher functions, but one need not be complacent with institutions which have degraded the doctor's degree by conceiving of the training in administration as being chiefly instruction in what "authorities" say should be done. One has a right to ask that all institutions shall make a genuine attempt to build up a body of scientific principles relating to administration and shall train students in those techniques of research necessary to solve administrative problems. It is significant to note the increasing number of superintendents with doctor's training who appreciate and insist upon the use of research techniques in solving their administrative problems.

One could make the same statements regarding the teacher of courses in education who has taken the Ph.D. degree in education. There are many masters of the art of instruction in principles of teaching and in school administration who do not hold this degree, but those adequately trained to make scientific studies of the major problems of methods, the curriculum, or supervision of instruction are still limited chiefly to those with research training. There are few research positions devoted wholly to such studies, and furthermore it still remains to be proved that a person isolated from the actual practice of teaching is best fitted to study it. The point which the writer wants to emphasize is this, that the teacher of education who has reached the doctor's level must be thought of as the most promising contributor to the advancement of knowledge in methods, curriculum, and supervision. If this is the case, then there should be no dual standards for candidates for the doctor's degree.

There are two courses open and only two. Either the highest degree in education will be reserved for those possessing that training in research which is essential to enable them to solve the problems in their field and to extend the science of education, or the highest degree will be granted to persons who are not trained to be intellectually independent but who must look to someone with research training to solve their problems.

One further matter is often overlooked by those who insist that doctors who plan to teach education should be given a broad knowledge of the general field of education rather than training in research. As a matter of fact the highest rank of teachers in education now receive general training in both their field and in methods of research. The first year of graduate work in education is chiefly a critical study of the

scientific knowledge relating to the entire field of education. Probably half of the courses in the following two years of study are concerned with critical study rather than specific training in research. The concept that a doctor does not know the general field of education is certainly open to challenge. The writer assumes that general cultural training outside the field of education is a function of undergraduate rather than graduate study.

If education were an old subject, with a large body of well-established facts and principles underlying it, the time might be ripe to discuss a dual type of training for the doctor's degree. But in view of the youth of the subject; the narrow gap which still separates scientific literature relating to it from the literature of speculation, dogmatism, and subjective opinion; the recency with which it has been admitted at all to the family of major academic subdivisions; and the great host of half-solved and unsolved problems in this field—in view of these things, it seems very premature to attempt any other than research as a universal requirement for the doctor's degree in education.

A CRITICAL STUDY OF THE CONTENT OF STANDARDIZED TESTS IN AMERICAN HISTORY

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THE content of standardized tests is likely to be a large factor in determining emphasis in teaching, both because of the prestige these instruments possess and because of the embarrassment teachers tend to feel when their pupils make low scores because the topics involved in the tests have not been taught. In a sense, the test-maker is the actual curriculum maker. To what extent do the makers of standardized tests so select their items as to make their tests drive toward progressive, forward-looking policies in curriculum construction? Miss Elizabeth Crossley, working under the direction of one of the authors, has shown that the distribution of methods of validating 183 standardized tests is such as to suggest an impeding influence rather than a helpful one in the relation of the tests to curriculum reform.[1]

TABLE I

DISTRIBUTION OF 183 STANDARDIZED TESTS ACCORDING TO METHODS USED IN VALIDATING THEM (AFTER CROSSLEY)

Method	No. of Tests
Textbook analysis	62
Correlation with school marks	47
Pooled judgments of competent persons	46
Items selected for difficulty	42
Determination of social utility—word counts	34
Correlations with previously validated measures	28
Logical or psychological analysis	26
Determination of social utility—errors in practice	18
Increase of percentage of success with successive ages or grades	15
Empirical try-out	15
Opinion of author	15
Analysis of courses of study	14
Determination of social utility—scientific job analysis	13
Correlation between parts of the test, each part testing for a different feature	9
Determination of social utility—on basis of general aims	9
Determination of social utility—frequency of reference in reading	6
Analysis of final examination questions	6
Differential scores of spaced groups	6
Correlation with teachers' ratings	4
Agreement with general observation of individuals	4
Questions submitted by competent persons	3
Correlation with college entrance examination scores	1

(For an additional 50 tests no information could be secured.)

We present in this paper the results of a comprehensive study of the content of standardized tests in American History in relation to their parallelism with social needs.

A somewhat similar study, but on a smaller scale, was made by E. W. Thornton. He examined ten standardized tests in American History, published between 1915 and 1924, ascertaining the allotment of items

[1] A more complete account of this study may be found in the *Second Yearbook of the National Society for the Study of Educational Sociology* (edited by David Snedden), pages 148-155.

to eight different chronological periods and the distribution of space to military, social-economic, and political-geographical matters.[2] He concluded that test-makers regard with too little seriousness the selection of content for their tests in history. We shall cite Thornton's results later in comparison with our own.

For the present study, the authors investigated twenty-three widely-used standardized tests in American History. The units employed were the specific references involved in the several questions. For example, in the question, *Who was the candidate on the ticket of the Democratic Party in the campaign of 1896?*, the units as defined in this study are *Democratic Party, campaign of 1896, 1896,* and *Bryan.* All references in true-false tests were counted; in multiple-choice tests only the correct alternative was counted. Those references were, of course, counted that constituted the body of the questions. It is evident, therefore, that the aggregate number of references would be far greater than the aggregate number of questions. There were in all 3,508 references. These were entered on cards together with notations of the test from which they were taken. The cards could, then, be stacked into distributions according to any criterion on which we wished to generalize.

It is, of course, evident that many difficulties would be encountered in allotting items to distinct categories. Classification is nearly always an artificial process. Mr. Altman did all of the recording and classifying. In this he guided himself by certain definite principles of procedure as far as possible and decided doubtful cases the best he could, sometimes supplementing his own judgment by that of his associates. But there is no reason to believe that more than a negligible percentage of the items were wrongly classified.

FINDINGS

Table III shows the allotment of references in the tests to the political, military, and social-economic phases. It will be seen that, of the 3,508 items classified, 67.3 percent were political, 22.1 percent social or economic, and 10.4 percent military. The tests are listed in the order of publication, so that the reader may study them for evidence of trends. How the distribution to phases compares with certain criteria, Table II will show.

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[2] Thornton, E. W. "The Use of Informational Tests in American History Teaching," *Historical Outlook,* XX (Jan., 1929), 12-17.

TABLE II

ALLOTMENT OF SPACE IN AMERICAN HISTORY TESTS ACCORDING TO PHASES IN COMPARISON WITH CERTAIN CRITERIA

	Percent to Political	Percent to Military	Percent to Social-economic
Recommendation of Committee of Eight	33	30	37
Textbooks, Rugg and Bagley Study	42	40	18
Books on Modern Problems, Horn Study	18.7	4.7	78
Encyclopedia articles, Horn Study	37	1.7	60
Tests, Thornton Study*	71	16	13
Tests, Present Study	67.3	10.4	22.1

*The tests studied by Thornton averages four and a half years earlier in publication than those of the present study, which accounts, at least in part, for the difference from our distribution.

Table IV shows the distribution of items in the tests to chronological periods. It will be noticed that the tests vary greatly in the percentage of space they allot to different periods, especially to the earliest and the latest periods.

TABLE III

SHOWING THE PERCENTAGE OF QUESTIONS IN EACH TEST DEVOTED TO EACH OF THREE PHASES

Date Published	Test	% Political	% Social-Economic	% Military
1916	Starch	71	3	26
1918	Barr Diagnostic	67	16	17
1920	Hahn History Scales	74	17	9
1922	Plymouth, 80A, 81A, 82A	55	13	32
1922	Pressey-Richards	67	19	14
1923	Gregory III, Form A	87	7	6
1923	Gregory III, Form B	73	18	9
1924	Witham	57	28	15
1925	Van Wagenan	57	34	9
1926	Columbia Res., Form A	57	42	1
1926	Columbia Res., Form B	57	42	1
1926	Ely-King	66	20	14
1926	Gregory I, Form A	57	30	13
1926	Gregory I, Form B	69	20	11
1926	Gregory II, Form A	73	16	11
1926	Gregory II, Form B	75	15	10
1926	Lynch Test Series	74	15	11
1927	Boston Research, B & D	73	15	12
1927	Denny-Nelson, Form A	65	25	10
1927	Denver, Forms B and D	67	16	17
1927	Iowa, Form A	64	22	13
1929	Junior American, Form A	66	30	4
1929	Junior American, Form B	69	28	3
	Average	67.3	22.1	10.4

TABLE IV

PERCENTAGES OF REFERENCES IN TEST TO VARIOUS PERIODS

Test	% Introductory	% 1492–1607	% 1607–1763	% 1763–1783	% 1783–1829	% 1829–1865	% 1865–1897	% 1897–1930
Starch	0	6	18	10	20	35	6	3
Barr	0	4	4	18	25	28	10	11
Hahn	2	3	15	13	19	18	8	20
Plymouth	0	11	14	11	27	27	3	8
Pressey-Richards	0	6	10	14	22	28	5	14
Gregory III, A	1	2	9	10	28	27	8	16
Gregory III, B	0	4	12	13	24	22	5	20
Witham	0	6	38	17	14	15	2	1
Van Wagenan	0	5	24	7	10	17	17	20
Columbia A	0	1	12	5	14	19	18	32
Columbia B	0	0	16	4	12	19	22	32
Ely-King	2	2	9	11	19	22	6	30
Gregory I, A	3	9	29	24	30	1	0	0
Gregory I, B	4	6	34	25	30	0	0	0
Gregory II, A	0	0	0	0	11	47	21	21
Gregory II, B	0	0	0	0	14	45	20	21
Lynch	1	5	11	32	20	27	6	20
Boston	2	8	25	12	24	14	6	11
Denny Nelson	2	7	20	15	15	15	7	19
Denver	1	5	36	4	39	19	1	0
Iowa	4	15	8	5	24	25	6	13
Jr. Amer. A	0	2	24	9	22	19	11	14
Jr. Amer. B	0	1	22	7	21	22	10	17
Average percent	.9	4.5	16.6	10.7	20.2	21.4	8.5	16.7

Table V shows our averages for all the tests for the several periods in comparison with Thornton's findings. The fact that the present study included tests published four years later than those studied by Thornton may explain some of the differences.

TABLE V

ALLOTMENT OF ITEMS TO CHRONOLOGICAL PERIODS ACCORDING TO TWO STUDIES

Period	Thornton's Study (Percent of items)	Present Study (Percent of items)
Introductory	1.67	.9
1492-1607	7.5	4.5
1607-1763	23.4	16.6
1763-1789	18.4	12.0
1789-1829	16.3	18.6
1829-1865	16.9	21.4
1865-1897	7.8	8.5
1897-Present	8.1	16.7

Table VI compares the distribution of space in tests according to chronological periods with that in textbooks and in the recommendation of the Committee of Eight.

TABLE VI

COMPARISON OF SPACE ALLOTMENT IN TESTS WITH THAT IN THE RUGG-BAGLEY STUDY OF TEXTS AND WITH THAT OF THE COMMITTEE OF EIGHT

Period	Textbooks (Percent)	Com. of Eight (Percent)	Tests (Percent)
Exploration and Discovery	8.27	12.9	5.4
Colonial Development and Colonial Wars	19.62	24.3	16.6
Pre-Revolutionary and Revolutionary	13.7	14.4	10.7
1783—End of Civil War	45.4	37.5	41.6
1865—Date of publication	14.45	9.3	25.2

In the last two tables of this study we have set forth the list of items in tests that occurred four times or more. We have compared the frequency of occurrence of the items with certain criteria for validity. In Table VII we have shown the correlation of these frequencies with the index values of American history items in the Washburne list of references in journal literature and with the values assigned in the Monroe-Herriott study based on consensus of judgment by teachers.

TABLE VII

CORRELATIONS SHOWING THE EXTENT OF AGREEMENT BETWEEN TESTS AND CERTAIN VALIDITY CRITERIA

	r	No. of items
Sixty top items common to our study and Washburne's	.18 ± .08	60
Sample of our list with Washburne's list, geographical items omitted	.47 ± .05	100
Our list with Washburne's, literary characters in addition omitted	.44 ± .04	167
Our list with Monroe-Herriott, common items	.36 ± .07	48

These correlations are low. If the distribution of references encountered in reading periodical literature indicates the distribution of emphasis on history needed in life, the tests are far from optimally valid. The same is true if we assume that the consensus of judgment by teachers is a true index of what is important. Of course a part of these low correlations is due to the unreliability of our measures, but even with this considered the agreement is too low.

The frequency of 546 dates was tabulated in our study. This was compared with several criteria for validity. Table VIII shows the results.

TABLE VIII

CORRELATION OF FREQUENCY OF DATES IN TESTS WITH CERTAIN CRITERIA

	r	No. of dates
Tests with consensus of opinion of experts (Wooter's study)	.029 ± .15	20
Tests with references in books and encyclopedia articles (Horn study)	.40 ± .10	26
Tests with consensus of teacher judgments (Monroe and Herriott study)	.47 ± .11	24

Table IX sets forth our list of references in tests to men and events, giving parallel to the several items the index values in the Washburne study of references in periodical literature and the values in the Monroe-

TABLE IX

THE ITEMS OCCURRING MORE THAN THREE TIMES IN AMERICAN HISTORY TESTS, SHOWING FREQUENCY AND COMPARISON WITH TWO CRITERIA

	Present Study	Washburne List	Monroe-Herriott
England	326	103	...
United States	312	81	
America	283	103	
France	150	100	
Colonies	116	11	
Constitution	114	17	
Civil War	103	61	55
South (states)	97	31	
Congress	76	72	
Revolutionary War	76	23	
Spain	70	78	
President of U. S.	69	53	
Virginia	66	56	
Europe	61	81	
World War	58	22	55
Washington, Geo.	57	61	157
Slavery	56		
Jefferson, Thos.	55	33	150
Louisiana Terr.	55	30	140
North (sectional)	55	22	
Lincoln	50	72	161
Massachusetts	50	50	
Jackson, Andrew	49	16	125
Mexico	48	33	
Indians	47	75	
New England	46	63	
Pennsylvania	45	56	
Mississippi river	43	42	
Hamilton, Alex.	40	16	179
Span. Amer. War	40	20	49
Union	40	13	
Texas	39	47	48
Tariff (general)	38	20	
French and Ind. War	37		
Maryland	37	39	
Decl. of Indep.	35	22	131
Roosevelt	35	74	148
Missouri Compromise	34		118
Wilson, Woodrow	34	65	150
Railroads	33		
War of 1812	33	9	71
Monroe Doctrine	32	32	132
Confederate states	30	15	132
Dutch	30		
West (states)	30	28	
Federalists	29		
New York State	29	100	
Columbus	28	17	150
Emancipation Procl.	28		112
Democrats	27	39	
Georgia	27	33	
Republicans	27	39	
Panama Canal	26	22	85
Senate	26	20	
Clay, Henry	25	8	143
Florida	25	53	47
Webster, Daniel	25	15	129
Supreme Court	25	29	
Cleveland, G.	23	35	
South Carolina	23	36	
Franklin, Benj.	23	28	147
Jamestown, Va.	22	7	83
Nullification	22		38
Const. Conventions	21		109
Erie Canal	21		69
Germany	21	92	
Mexican War	21		21
Philadelphia	21	72	
Puritans	21	44	
Rhode Island	21	27	
Banks, National	20		
Art. of Confed.	20		70
Cabinet	20	9	
Canada	20	72	
Comp. of 1850	20		68
House of Represen.	20	18	
Saratoga, Battle	20		38
Continental Cong.	19		75
Kansas Nebr. Bill	19		65
McKinley, Wm.	19	34	83
Quebec	19	22	38
Yorktown, Battle	19	7	35
Whitney, Eli	19		128
Stamp Acts	19		71
Gettysburg, Battle	18	24	122
Labor Unions	18		
Lewis & Clark Exped.	18		33
Panic of 1837	18		42
Penn. Wm.	18	11	98
Alien and Sedition Acts	17		
Dred Scott Case	17		54
Grant, U. S.	17		155
New Amsterdam	17		
Calhoun, J. C.	17		109
New York City	17	100	
Philippines	17	30	
Secession	17		
Adams, John	16	10	48
Alaska	16	27	40
Cabot, J. and S.	16		67
Douglass, S. A.	16	9	140
Johnson, Andrew	16	9	
Missouri	16	47	
Monroe, Jas.	16		118
Napoleon Bonaparte	16	50	
Ordinance of 1787	16		
Pilgrims	16	14	61
Plymouth Colony	16		
China	15	98	
Lee, R. E.	15	21	150
Davis, Jefferson	15	13	75
League of Nations	15	19	
Northwest Terr.	15		
Quakers	15		
Spoils System	15		49
Boston	14	92	
Civil Service	14	61	63
Connecticut	14	47	
Oregon	14	36	

	Present Study	Washburne List	Monroe-Herriott
Pacific Ocean	14	50	
Parliament	14	47	
Pitt, Wm.	14	11	
Public Schools	14		
Alabama Claims	13		
Champlain	13		
Embargo Act	13		
New Mexico	13	27	
Treaty of Paris	13		13
Jay John	13		45
Williams, Roger	13		
Catholic religion	12	53	
Hudson River	12	63	
Jay Treaty	12		
LaSalle	12		78
Madison, Jas.	12		74
Porto Rico	12		
Underground R. R.	12		
Union Army	12		
Carpetbaggers	11		
Education	11		
Fulton, Robt.	11		123
Garrison, W. L.	11		67
Henry, Patrick	11	6	81
Magellan	11		86
New England Confed.	11		
North Carolina	11	39	
Oglethorpe, Jas.	11		
Russia	11	78	
Sherman Anti-Trust	11	17	
Va. and Ky. Resolutions	11		
Washington, D. C.	11	75	
Webster-Hayne Debate	11		
Writs of Assistance	11		
Federal Reserve	10	13	
George III	10	17	
Cuba	10		
Hartford Convention	10		
Harrison, W. H.	10	11	
Hayes, R. B.	10		
Holland	10	66	
Holy Alliance	10		
India	10	63	
Inter-State C. C.	10	17	
Iroquois	10		
Morse, S. F. B.	10		115
St. Lawrence river	10	7	
Specie Circular	10		
Taft, W. H.	10	62	49
Venezuela	10	23	
Vicksburg	10		
X Y Z Affair	10		
Atlantic Cable	9		
Cornwallis	9		
Fugitive Slave Law	9		
Gadsden Purchase	9		
Homestead Act	9		
Howe, Elias	9		
Italy	9	86	
Kentucky	9	44	
McCormick, Cyrus	9	10	74
Mann, Horace	9		
New Jersey	9	56	
Non-Intercourse Acts	9		
Sherman, W. T.	9	10	86
Spanish Armada	9		
Tariff of 1832	9		
Utah	9	22	
Whiskey Rebellion	9		
Bell, Alex.	8	7	87
Boston Tea Party	8		48
Burgoyne, Gen.	8		
Dist. of Columbia	8		
Hayes-Tilden Elect.	8		
House of Burgesses	8		
Immigration	8		
Intolerable Acts	8		
Ku Klux Klan	8	7	
Lake Erie	8		
Maine (state)	8	59	
Marshall, John	8	6	
Meade, Gen.	8	7	
Monitor and Merrimac	8		
Morse, Robert	8		
Navigation Acts	8		
Ohio (state)	8	47	
Panama (state)	8	22	
Perry, Admiral	8		52
Progressives	8		
Squatters Sovereignty	8		
Stowe, Harriet B.	8	9	65
Uncle Tom's Cabin	8		
Wilmot Proviso	8		
Woman's Suffrage	8		
Abolitionists	7		
Allies	7	22	
Anti-Federalists	7		
Ashburton, Lord	7		
Boston Massacre	7		
Bunker Hill	7		60
Clark, Geo. R.	7		107
Clinton, DeWitt	7		
De Soto	7		54
Great Lakes	7		
Japan	7	86	
Jackson, Stonewall	7	8	48
Liberator	7		
Lincoln-Douglas Debates	7		64
Lord Baltimore	7		
Marquette	7		
Mormons	7	10	
New Orleans, Battle	7		64
Paine, Thos.	7		
Polk, Jas. K.	7		
Prohibition	7	7	
South America	7	50	
Tariff of 1816	7		
Tilden, S. J.	7		
Vice-President	7		
Webster-Ashburton Treaty	7		
Westward Expansion	7		37
Wright Bros.	7	9	
Adams, J. Q.	6	7	
Africa	6	75	
Albany Plan	6		
Appomatox	6		
Bill of Rights	6		
Boxer Rebellion	6	10	
Braddock, Gen.	6		
Delaware	6		
Edison	6	23	98
Fort Sumter	6		
Greely, Horace	6		
Gold Rush	6		82

	Present Study	Washburne List	Monroe-Herriott
Harvard	6	76	
Inter-St. Comm. Act	6	17	
Lexington, Battle	6		48
Marco Polo	6		
Middle States	6		
Panic of 1873	6		
St. Augustine, Fla.	6		
Smith, Capt. John	6	6	100
Townsend Acts	6		
Turkey	6	53	
Virgin Islands	6		
Whig Party	6	8	
Amer. F. of Labor	5	16	
Amerigo Vespucci	5		55
Appalachian Mts.	5	7	
Arizona	5	39	
Arnold, Benedict	5	7	45
Australian Ballot	5		35
Balboa	5		
Berkeley, Gov.	5		
Brown, John	5	6	
Charles I	5	11	
Confederate Army	5		
Constantinople	5		
Detroit	5	42	
Dewey, Admiral	5	19	65
Drake, Sir Francis	5		
Farragut, Admiral	5	6	
Field, Cyrus	5		
Fredericksburg	5		
Freemont, J. C.	5	6	
Gag Rule	5		
Hay-Paunceforte Treaty	5		
Hayne, R. Y.	5		
Hudson, Henry	5	8	
Income Tax	5		
Industrial Revol.	5		
Initiative, Recall, Referendum	5		
Jones, J. P.	5	6	73
LaFayette, Gen.	5	21	65
Maine, battleship	5		
Mason and Dixon	5		
Ohio river	5	11	
Otis, James	5		
Ponce de Leon	5		
Potomac river	5	23	
Tariff of 1824	5		
Tea Tax	5		
Winthrop, Gov.	5		
Wolfe, Gen. Jas.	5		
Adams, Samuel	4		
Andros, Sir Edmond	4		
Austria	4	59	
Bryan, W. J.	4	47	
Bull Run, Battles	4		
Burke, Edmond	4		
Burr, Aaron	4		
Carnegie, Andrew	4	38	
Clayton, Anti-Trust	4		
Comp. of 1854	4		
Concord Bridge Fray	4		4
Coolidge, Calvin	4	6	52
Cooper, J. F.	4		
Cortez	4	11	
Cromwell	4		
Crusades	4		
Debs, E. V.	4		
East	4	22	
Federal Res. Act	4	13	
Freedman's Bureau	4		
Genet, Citizen	4		
Genoa	4	14	
Gompers, Samuel	4	19	
Goodyear, Dr.	4		
Hoover, Herbert	4	19	
Houston, Samuel	4		
Huguenots	4		
Isabella of Spain	4		
Joliet	4		
Montcalm, General	4		
Kansas	4	44	
Manila Bay	4		
Minnesota	4		
Nevada	4	22	
Ostend Manifesto	4		
Popes Line of Demarcation	4		
Populists	4		
Proclamation of 1763	4		
Pullman Strike	4		
Raleigh, Sir W.	4	14	58
Reconstruction	4		
Religion	4		
Renaissance	4		
Richmond	4	26	
Rough Riders	4		
Scott, Gen. W.	4		
Sherman Silver Act	4		
Slater, Samuel	4		
Stuyvesant, Peter	4		
Succession Act, Pres.	4		
Tariff of 1828	4		
Thanksgiving	4		
Trade Laws	4		
Trent Affair	4		
Trusts	4		
Van Buren, Martin	4		
West India Co.	4		
West Indies	4	20	
Young, Brigham	4		

Herriott study based on consensus of judgment by teachers, insofar as these items appear in the published reports of those studies. Items occurring less than four times are omitted from the table. There were 473 of these on our list. Table X gives our list of dates, omitting 56 that occurred only once each. Among the items that occurred infrequently in the tests were many the importance of which should warrant a large

amount of attention. In the list of those occurring only once, for example, there are such items as: electoral college, Esch-Cummins Transportation Act, filibustering, free silver, greenbacks, liberty loans, national university, parcel post, postal savings, and single tax.

TABLE X

LIST OF DATES OCCURRING IN AMERICAN HISTORY TESTS MORE THAN ONCE, WITH FREQUENCY OF USE

(Each indicated frequency applies to the item opposite it and to all succeeding items until another frequency is indicated.)

Date	Fr.	Date	Fr.	Date	Fr.	Date	Fr.	Date	Fr.
1850	31	1876	9	1823	5	1754	3	1778	2
1812	29	1917		1824		1759		1779	
1900	26	1846	8	1854		1780		1781	
1860	25	1861		1883		1807		1788	
1837	18	1896		1608	4	1825		1790	
1787	17	1920		1760		1829		1813	
1763	15	1607	7	1774		1833		1866	
1783		1619		1881		1835		1878	
1845	14	1620		1787		1836		1899	
1776	13	1865		1794		1849		1901	
1803		1867		1798		1856		1908	
1890		1895		1804		1864		1910	
1775	12	1733	6	1828		1869		1921	
1789		1770		1847		1902			
1820		1793		1853		1912			
1832		1814		1880		1913			
1870		1848		1887		1916			
1914	11	1873		1894		1436	2		
1819	10	1915		1918		1497			
1830		1453	5	1519	3	1636			
1862		1588		1521		1651			
1863		1643		1565		1664			
1898		1765		1649		1680			
1492	9	1808		1660		1755			
1800		1815		1750		1777			

SHORTER ARTICLES

INVESTIGATIONS IN THE STUDY OF LANGUAGE

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FEW studies have been published that deal with mistakes made by students in the study and use of language. It is the purpose of this article, (1) to indicate the kinds of mistakes made by students of this subject; (2) to suggest remedial work for such mistakes; and (3) to explain these mistakes and show how remedial work through a case study from the Demonstration School of Peabody College is accomplished.

After three weeks of study and research on the psychology of language, a survey of the Demonstration School was made, and a boy from grade five was chosen for the case study. A careful survey of the boy's home life, social life, and school life was made, and to establish a point of contact for beginning the work his interests were discovered.

The diagnosis was made through the giving of standardized and informal tests. The following standardized tests were given: National Intelligence Test; Holley Sentence Vocabulary Scale; Charter's Diagnostic Language Test; Charter's Diagnostic Language and Grammar Test; Gray's Standardized Oral Reading Test; and the Stanford Achievement Test.

Informal testing was done (1) by engaging the boy in social conversation, (2) by having him read stories of the type in which he had shown an interest, and (3) by observation of his classroom work. Records were kept of his errors in each of these cases.

From standardized and informal classroom observation, and conversation the following facts were brought out:

1. Normal learning capacity.

2. Below Standard in rate and comprehension of reading. Poor Achievement in reading seemed to be due to: (a) poor habits of attacking new words; (b) small meaning vocabulary; (c) insufficient number of sight words; (d) habit of doing little outside reading; (e) nonrecognition; (f) partial mispronunciations; (g) substitutions; (h) omissions; (i) repeating words; and (j) insertion of letters.

3. The following types of incorrect usage were also noted: (a) verbs; (b) pronouns; (c) adjectives; (d) adverbs; (e) double negatives; and (f) careless pronunciation.

REMEDIAL MEASURES

1. Methods used to improve poor habits of attacking new words were: (a) teaching sounds of letters; (b) teaching families of words; (c) teaching the blending of these two.

2. To improve small meaning vocabulary the teacher: (a) assisted him in getting the meaning from content, (b) the dictionary was used (with the teacher's help, as he had been given no previous training in the use of it).

3. To increase the number of sight words recognized, lists of words to be pronounced were given. These were taken from errors of oral reading paragraphs and conversation, and others from the Thorndike Word List. If there were mispronunciations, partial mispronunciations, or substitutions, these words were used as the basis of the next work.

4. To encourage outside reading: (a) The interests of the boy were discovered and special reports were called for such as scout oath, bird study, first aid treatments, pioneer stories, and various other reports, (b) a few paragraphs from stories in Child Life, and John Martin's Magazine were read to the boy. The teacher then suggested that he finish the story, and the next day he told her all about it.

5. To improve non-recognition, partial mispronunciations, substitutions, omissions, and repeating of words, a fifty word paragraph was given each day to be read aloud. These paragraphs were taken from magazines and textbooks. They were typed and mounted on small sheets of paper. A daily record was kept of the errors.

6. For incorrect usage, and miscellaneous errors the following remedial work was given:

A letter was written to the boy's parents soliciting their coöperation in trying to improve his spoken English. A list of his incorrect usages and a copy of the correct forms to be used were sent home each week. Daily lessons were given the boy on charts (24 in. x 36 in.). The correct forms were given first. Then lessons in which the boy filled in blanks and answered questions and numerous other drills were given.

Pictures involving the interests of the boy were cut from magazines and mounted on 9 x 11 cards and were used as subjects for oral composition. Six lessons with flash cards were given for quick recognition.

CONCLUSIONS

After twelve weeks of work, a second testing was applied. The boy showed a great improvement in all forms of spoken and written language

work. The results seem to justify the use of diagnostic and remedial work in language and reading.

THE CHILDREN'S ORTHOPEDIC HOSPITAL: A SURVEY OF THE INTELLIGENCE OF CRIPPLED CHILDREN

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A survey of the patients in the Children's Orthopedic Hospital of Seattle was made for the purpose of ascertaining to what degree the intelligence of crippled children compared to the intelligence of unselected children in physical health. The survey was made in the fall of 1929.

The information was obtained from three sources: (1) the public school teachers of the Children's Orthopedic Hospital; (2) a group of physicians in Seattle; and (3) intelligence tests of 148 patients in this hospital. The test used was the Stanford-Binet Intelligence Test, and was given by experienced examiners from the Child Study Laboratory of the Seattle Public Schools.

The group of children was classified according to diagnosis. Four divisions were made: (1) poliomyelitis, including all cases of infantile paralysis; (2) spastic paralysis of birth including infantile spastic paralysis and Perthe's disease; (3) tuberculosis of the knee, hip, ankle, etc.; and (4) a miscellaneous group containing (a) nutritional disorders, rickets, etc.; (b) infections not involved in the central nervous system: osteomyelitis, syphilis, empyema, appendiceal abscess; (c) traumatic disorders including dislocations, fractures, traumatic club feet; (d) cases of central nervous involvement, such as chorea, and post encephalitis; (3) cases of tumor, malignant (sarcoma and carcinoma) and benign (tumor of spine and brain tumor).

The intelligence test results of the patients were obtained from Dr. Frances Gaw, director of the Child Study Laboratory of the Seattle Public Schools. A diagnosis of each case was submitted by Miss Ruby Fall, historian of the Children's Orthopedic Hospital. From these statistics the following facts were found:

1. The intelligence level of this group as a whole is appreciably below that of the unselected group of physically healthy children. The

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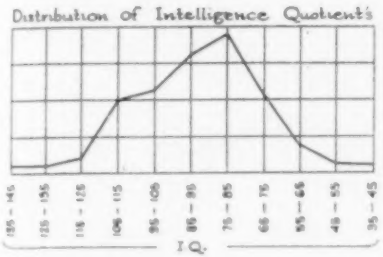
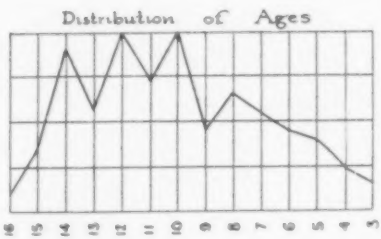
mean intelligence quotient for these 148 cases is 86.8. The cases range from one with an intelligence quotient of approximately 35 to one with an intelligence quotient of 138. The chronological ages of these children range from three to sixteen years. In the survey there were three outstanding intelligence quotients. Two of them, 122 and 130, belong to the poliomyelitis group. The other, 138, is in the tuberculosis group. The following graphs give the distribution of the intelligence quotients and ages.





2. There is a marked difference in the mean intelligence quotients of the different groups. The group of congenitally deformed children show a greater inferiority in intelligence, while both infectious diseases and poliomyelitis groups show a higher and more normal rating.

3. The opinion of both teachers and physicians is in keeping with the findings of the intelligence tests summary in general.

Because of the small number of cases surveyed, the writer wishes to make more significant the findings by comparing them with the findings of Drs. Fernald and Arlitt in their psychological study of a larger group of crippled children. They found a mean intelligence quotient of 82.35 in their study of 194 crippled children. This compares favorably with that found by the writer, 148 cases showing a mean of 86.8. The following table shows the mean IQ and the number of cases of various groups of children examined by Lee and Fernald.

Disease Groups	Mean IQ		No. of Cases	
	Lee	Fernald	Lee	Fernald
Poliomyelitis	92	84	26	62
Spastic birth paralysis	69	69	10	27
Tuberculosis	88	86	41	35
Miscellaneous:				
Nutritional	83	86	3	15
Infectious	92	86	17	17
Traumatic	86	86	10	17
C. N. S. Involvement	74	75	5	15
Congenital Deformity	61	66	14	—

With the exception of the poliomyelitis group, there is no wide margin of difference in the intelligence quotients of the two reports. The number of cases that was under observation by the writer is much smaller than the number of cases studied by Fernald and Arlitt.

These results show that crippled children have an inferior intelligence, but it is quite possible that these children would have had inferior intelligence without their physical handicap. This survey does not yet prove that a diseased or injured condition influences the intelligence of the individual. In order to do this it would be necessary to find out the intelligence quotient at the time of the onset of the disease. It would also be necessary to determine the intelligence quotient of siblings. It is known that the economic status of the families of these crippled children is low.

Until a much larger group of crippled children can be studied, not only in their present condition, but in their condition prior to their handicap, these reports are only indicative and not valid.

EDITORIALS

CURRICULUM SUPERVISION

Tremendous progress has been made during the last decade and a half in the reconstruction of educational curricula and objectives. Notwithstanding, however, this very great advance in curriculum construction, very little, relatively speaking, has been done in curriculum supervision: (1) in the appraisal of the curriculum in operation; (2) in reconstructing the curriculum to meet the needs of individual teachers, pupils, classes, schools and school communities; and (3) in the training of teachers in the procedures incident to the curriculum constructed. We want here to discuss only the appraisal of the curriculum in operation.

Supervisors are almost wholly devoid of a curriculum consciousness. When they visit the classroom, for example, the aspect of instruction that they most frequently see is method. They almost never see the curriculum: (1) whether the subject matter and the activities utilized in the classroom are of general *social value;* (2) whether they possess for the individuals concerned a sufficient *experience value* to make them worth while (the pupils to whom the activities are presented may have had such previous contact with them as to make them of little training value); (3) whether they possess *difficulty value* (they may be too easy or too hard); and (4) whether they possess *interest value.* With the exception of criterion number one, the criteria here given are all criteria growing out of the adoption of the curriculum to the needs and conditions of classroom instruction. A supervisor may spend a considerable amount of time in curriculum construction outside the classroom and yet be almost completely devoid of a curriculum consciousness in the supervision of classroom instruction.

Two devices with which supervisors should be familiar have been developed for the appraisal of the educational curricula and objectives of the classroom: (1) a device for rating courses of study; and (2) a method of making quantitative comparisons of theory and practice in the selection of subject matter and objectives. Stratemeyer and Bruner's[1] *Rating Elementary School Courses of Study* illustrates the application

[1] Stratemeyer, Florence B., and Bruner, Herbert B. *Rating Elementary School Courses of Study:* a report of the results secured from rating nine thousand elementary school courses of study. New York: Bureau of Publications, Teachers College, Columbia University, 1926.

of the first of these devices; and Brueckner's[2] study of "The Value of Time Analysis of Classroom Activity as a Supervisory Technique" illustrates the second. These devices should prove useful to supervisors interested in the appraisal of the curriculum employed in classroom instruction.

The two devices referred to above pertain, however, merely to an aspect of the curriculum. Many data-gathering devices such as time charts, rating scales, check lists, etc., have been developed for the study of classroom management and method. More attention needs to be given to the curriculum in the classroom. There is need for new data-gathering devices and a curriculum consciousness upon the part of supervisors.

A. S. BARR

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[2] Brueckner, Leo J. "The Value of a Time Analysis of Classroom Activity as a Supervisory Technique," *Elementary School Journal*, XXV (April, 1925), pp. 518-22.

REVIEWS

Address all communications relative to book reviews to Editor E. J. Ashbaugh, Miami University, Oxford, Ohio.

LIMBERT, PAUL MOYER. *Denominational Policies in the Support and Supervision of Higher Education.* New York: Teachers College, Columbia University, 1929. vii + 242 pp.

This study, Contributions to Education No. 378, carefully discusses and, it would appear, impartially analyzes the provisions which eight Protestant denominations in the United States have made for the support and supervision of their affiliated colleges and universities. It also traces the main trends in the development of the policies of these denominations, and furthermore, with respect to their support and supervision of higher education, compares and contrasts the policies of one denomination with those of another. The eight denominations under review represent churches which differ widely in size, doctrine, and ecclesiastical organization. The study is limited strictly to the colleges. These investigations are confined to two major functions of denominational policies, namely, support and supervision. Primary emphasis is placed upon policies. The study, which is somewhat intensive, provides: (1) important data for a study of the history of higher education in the United States during the past century; (2) a significant approach to a study of the attitudes of these denominations toward higher education; and (3) a statement of the lines along which denominational policies of education must work in the immediate future if programs are to be effective. In addition to the more formal contributions, the study is valuable by virtue of the brief history of each denominational board, based largely upon reports and minutes with careful citations thereto. Chapter Four, which asks such questions as "When is a college denominational?" "Why must a church sustain colleges?" "What has been the influence of boards of education on religious instruction?" and "What are the marks of a Christian College?" is especially fruitful and suggestive. The book should prove a helpful, stimulating, guide to leaders and administrators in schools for higher education, especially those under denominational control.

L. W. CRAWFORD
George Peabody College for Teachers

BISHOP, EUGENE A. *The Development of a State School System.* New York: Columbia University, 1930. 159 pp.

New England has been a pioneering section. Her three centuries of experience in developing civilization on a new continent, and her experiments and achievements are of great interest to the rest of the country, because she sent large numbers of her people to the West where they reproduced in modified form the familiar institutions of their old homeland. Many books have been written differing in scope and quality, and dealing with one or another phase of the history of New England education. Educators have become fully conscious of the

importance of two educational developments of the present and near past. These are, the rise of powerful and closely integrated state systems and the rise of professional school administration. As a direct result there are books appearing, one after another, interpreting the education of the past and present in relation to these two trends. The above book belongs to this growing class. It deals with the history of education in New Hampshire. It tells the story of the development of the public system and its administration in that state. And incidentally it illustrates the fact that history can and should be constantly rewritten in the light of the most recent social progress.

The book contains nine chapters and a bibliography. The first few chapters deal with the settlement, population, economic and other factors, and trace the history through the colonial period. There is a chapter on "district domination," and another on the rise of union supervisory districts. Chapter Seven considers the conditions culminating in the school law of 1919 and presents an analysis of that law. The final chapter, not to count the summary, describes the very remarkable progress of education in New Hampshire under the law of 1919.

The volume does not pretend to give a complete history of education for the selected state. It is a monograph covering some of that history from the standpoint mentioned in the first paragraph above.

H. G. Good

Ohio State University

Doll, E. A., and others. *A Survey and Program for Special Types of Education.* Trenton, New Jersey: Public Schools, 1929. 96 pp.

This survey is a contribution to modern educational administration. During the past fifteen or twenty years the more progressive schools have demonstrated the necessity of special education for subnormal children as a natural sequel to the 6-3-3 and X-Y-Z plans on which instruction has been organized.

It has proved to be more than a fad. According to the authors of this survey, "special education is viewed as a necessary and feasible means of salvaging children who would otherwise become defective and dependent members of society." They continue, "While the humanitarian aspects of the problem must constantly be kept in mind and should in the long run determine the wisdom of providing special education in the public schools, special education is also considered as an ultimate public school economy with reference to the efficiency of instruction for both normal and exceptional children."

Every school system has its quota of physically, socially and mentally handicapped children. Even the gifted child today may be said to be handicapped, in that he is in need of special educational advantages. "With the gifted it may make the difference between success or failure in the solution of some of society's most difficult problems. With the physically and mentally handicapped it may make the difference between self-supporting, law-abiding citizens and dependent or delinquent members of society."

One of the features of the report is a chart showing the administrative organization of special education. It recognizes the need of special training for (1) the *Blind* children, provided for by the State Commission for the Blind; (2) the *Partially Sighted*, who should be educated in sight-saving classes; (3) the *Deaf*, for whose education the State School for the Deaf provides the necessary facili-

ties; (4) the *Hard of Hearing*, who require special work in lip-reading classes; (5) those having *Lowered Vitality*, who should be cared for in open-window classes; (6) *Active Tuberculous* cases, for whom provision is made in the State Sanatorium; (7) *Cripples*, who should be trained in special orthopedic classes, or by tutors at home; (8) the *Low-Grade Feeble-Minded*, who should be sent to State Institutions or placed in Seguin classes in the public schools; (9) the *High-Grade Feeble-Minded*, who should attend Binet classes and schools; (10) the *Borderline Subnormal*, who should receive manual education and occupational training; (11) children having *Special Disabilities*, who should attend individual teaching classes; (12) the *Gifted*, who should either have special classes or be permitted to skip grades; whose curriculum should, at any rate, be enriched; (13) the *Truant and Delinquent*, who should be placed in resident schools; (14) the *Certificated*, who attend the continuation schools; (15) the *Speech Defectives*, who receive special instruction in the speech improvement classes; and (16) the *Psychiatric*, who should become special individual adjustment cases, or should attend the resident school if so recommended by the psychiatrist.

Although prepared specifically for the City of Trenton, and with reference to the school laws of New Jersey and the institutional facilities of the State, the report is equally applicable to other cities, and offers a program readily adaptable to local conditions elsewhere.

MYRA W. KUENZEL
The Training School at Vineland

MORRIS, LYLE L. *The Single Salary Schedule.* New York: Columbia University, 1930. 79 pp.

After considering the various contentions of advocates and opponents of the single salary schedule the author treats (1) the amounts of academic and professional training of teachers and the possible effect of the single salary schedule thereon, (2) experience and merit as factors in the single salary schedule, (3) the cost that may be attributed to the use of the single salary schedule, and (4) its administration.

Data from fifty single and regular salary schedule cities are tabulated, and show that (1) there is no significant difference in the training requirements for beginning teachers in single salary cities as compared with those of regular salary cities, (2) single salary teachers are better trained than teachers in regular salary cities but the difference between the training of elementary and secondary teachers is not being materially reduced, (3) there are slightly more of the regular salary teachers increasing their training, and (4) direct financial reward for training in service is as great in single salary cities as in others. Examples of the types of courses taken by teachers are offered to indicate the fact that teachers take the credit most readily available in place of the credit most appropriate to their positions where salary increases are offered for same.

Comparisons of the tabulated salaries and teachers' loads of single and regular salary cities give evidence to prove that (1) the single salary schedule has not increased the percentage of total current expenditures going to teachers' salaries, (2) has not materially increased the elementary or high-school teachers' salaries, and (3) superintendents increase salaries without increasing the amount for instruction by increasing the size of classes and by employing more teachers at or near the minimum salary. The evidence

points to the fact that classes are larger in single salary cities and that a difference of one pupil per teacher permits of a possible salary increase of forty-five dollars per year.

Further comparisons between single and regular salary cities reveal the lack of regulations concerning the type of further training for salary increase, and the lack of provisions to evade salary schedule regulations in order to retain men in the profession and to hold exceptional teachers of both sexes. Both types of salary schedules exhibit the same tendencies. The author reports that 60.7 percent of single salary cities pay men more than women in like positions and that over half have teachers at salaries above their schedule.

Since the administrators of single salary schedules do not follow the letter of their schedules, this study presents the status quo under these conditions rather than a comparison of conditions under two strictly different types of salary schedules. The complete lack of regularity in accrediting training and experience, the subjectivity of ratings of merit, and the common practice of irregular departures from schedule are contained in the authors' summary and conclusions as defects of present single salary procedures.

E. E. LEWIS
Ohio State University

MCGUFFEY, VERNE. *Differences in the Activities of Teachers in Rural One-Teacher Schools and of Grade Teachers in Cities.* New York: Columbia University, 1929. vi + 65 pp.

The author's problems are: 1. What differences, if any, exist in the activities of these two groups of teachers? 2. What is the nature of these differences? 3. Are these differences accidental or necessary? 4. Can these differences be overcome by a change in the administration and supervision of one-teacher schools? 5. Are these differences significant in the training of teachers for one-teacher schools? 6. If differentiation of training is necessary, just what type and how much training is desirable?

It is evident that complete answers to the above questions would be interesting and profitable. The regrettable thing is that the author does not furnish complete answers to his own questions.

The differences in the activities of teachers in rural one-teacher schools and of grade teachers in cities are supposedly found by (1) an examination of a relatively small number of teachers' diaries from which a check-list of 300 items emerged; (2) access to and some use of the check-list used in the Commonwealth study (job analysis based on statements of activities of teachers by teachers); (3) the opinions of 60 graduate students, County Superintendents, and experts in rural education. Out of these listings and opinions came a check-list of 112 items. This list was then submitted to "156 best and 148 poorest" teachers named by County Superintendents, to an additional 100 teachers in rural one-teacher schools, to rural teachers attending summer schools, and teachers of 600 rural one-teacher schools from which replies numbering 550 were received from twenty-four states. Five check columns were provided, but three of them recorded opinions only and so were discarded. Column one required a check after the activity (in the list of 112) "if you do it;" column two required a check "if you do not do it but think you ought to do it." Five hundred-fifty replies were received and tabulated. Then the same check-list of 112 items was submitted to 200 grade teachers in towns and cities and the answers tabulated. The tabu-

lated answers from rural and city teachers were then set up in parallel columns for comparison and conclusion. Twenty-two items relate to activities often performed by an administrator or supervisor, 17 to activities involved in instruction of classes, 22 to non-teaching school activities, 17 to personal relations, 17 to community relations, and 17 to activities concerning buildings and grounds. It is perfectly obvious that it is quite possible for 21 teachers of rural one-teacher schools to "live alone in a teacherage" while no city teacher does so; or that 77 teachers of rural one-teacher schools "conduct opening exercises profitable to all grades at the same time" while no graded teacher does it; or that 57 rural teachers "organize the school in harmony with the life of a farm community" while no graded school teacher in a city does such a thing. Certain things are presumably fairly obvious without resorting to a questionnaire.

The measure used in evaluation is the so-called standard error, revealed by the formula $e = \frac{p \times q}{n}$, in which p is "the percent who do," q is "the percent who do not," and n is the number of cases in the sampling. For illustration, if, out of 80 reporting, 30 percent "formulate the plan for educational advancement of the community" and 7 percent say they do not, we get the equation, $e = \frac{210}{80} = \frac{30 \times 7}{80} = 2.625$. This e is found for the data assembled and the following remarkable conclusion is stated (p. 48): "A comparison of the activities of one-teacher schools with those of grade teachers shows that on every one of the 112 items on the check-list there is a difference greater than three times the standard error of the difference, thus establishing the fact that the types of teaching positions are essentially different in their requirements." The reason for "three times the standard error of the difference" is (p. 34): "Since practically all the possible errors due to limitation of sampling will lie between ± 30, we shall also show that value." In the presence of such assurance, each man should look out for himself!

The writer admits (p. 61) that "For a considerable number of items in the list, the activity named is so indefinite that there is a lack of certainty as to the intent of the answer." We might add that if the intent were clear and the certainty absolute, the answers would still fall short of verifiable facts.

The author's conclusions are naïve and almost apologetic. There are differences, to be sure, but "The activities shown to be unique to the one-teacher school have not been made specific enough, in some cases, to form the most reliable bases for setting up a curriculum of special training for those who are to go to the one-teacher schools. On the basis of the data at hand, we propose that in addition to courses in subject matter and theory of education demanded of all prospective teachers, the knowledge and skills involved in the following topics should be included in the training of all who are to go into the one-teacher schools." Then follows a list of 48 items derived from the author alone knows where. Some of them have not even been given the sanctity of the standard error treatment (Item 48, p. 65). After all the semblance of scientific treatment, the conclusion issues forth as a "wise guess." Another disappointment *de luxe*.

JOHN A. H. KEITH

Pennsylvania State
Department of Public Instruction

INSKEEP, ANNIE DOLMAN. *Child Adjustment.* New York: D. Appleton and Company, 1930. xiv + 427 pp.

This is a discussion covering a very wide field of the factors of child growth and development. By far the larger part of the treatment, eleven out of seventeen chapters, relates to physical development. One brief chapter is given to "The Development of Mind," two chapters to "The Measurement of Intelligence," one to "Childhood and Adolescence," and two to emotional development and mental hygiene. A few of the recently popular theories of psychology are briefly mentioned in an appendix.

The discussion of physical growth, and the factors which modify it, is clearly set forth, is very complete, and in almost all particulars thoroughly up to date. The chapter relating to psychological adjustment is entirely inadequate, the ones on measurement of intelligence, adolescence, etc., are too sketchy to be of first value, and the appendix seems not only to be out of place in a discussion of this sort but also to be so scantily treated that it fails in its purpose.

The first eleven chapters of the book, however, are of such worth as to justify its use as a text in a course on the physical development of the child.

D. A. WORCESTER
University of Nebraska

POWELL, JEROME JESSE. *A Study of Problem Material in High-School Algebra.* New York: Columbia University, 1929. 100 pp.

Algebra has been severely criticized on the ground that its problem material lacks reality and genuineness. The teacher in search for better problems will be helped by the results of a recently published investigation. On the basis of carefully defined criteria such as genuineness, importance, reality, interest, and difficulty, 1300 problems were ranked by experienced teachers, and 200 problems suitable for the ninth grade were ranked by ninth-grade pupils on the basis of interest. This led to three lists of the best verbal problems of the original list: 102 problems with interest values assigned by the pupils and importance values estimated by the teachers; 123 with importance values assigned by the teachers; and 201 evaluated according to interest.

It was found that there is a decided lack of agreement between the judgments of pupils and teachers as to the choices of problems. Pupils are inclined to show little concern about problems rated as highly interesting by the teachers, and often they do not care for problems considered genuine and important. Teachers give highest ranks to problems dealing with finance, while pupils are interested in them and in all other problems only when they are expressed in terms of activities of young people. They show a great deal of interest in puzzle problems. In selecting problem material the teacher should, therefore, create situations that make the problems seem real to the pupil and appeal to him as worthy of attention.

A chapter on methods of teaching problems in algebra adds greatly to the value of the study. It contains discussions and bibliographies on such topics as abilities in problem solving, problem analysis, and type problems.

High-school teachers will find in this book much valuable material which they may use profitably to supplement the work of their classes.

E. R. BRESLICH
The University of Chicago

YAKEL, RALPH. *The Legal Control of the Administration of Public School Expenditures.* New York: Teachers College, Columbia University, 1921. vii + 167 pp.

The author studied both past and present legal and administrative practices, summarizing the type and substance of the law governing the administration of public school expenditures. He set up a model code which represents the most desirable and effective legal controls for the regulation of the administration of public school expenditures.

His findings should be useful to the school administrator as a source of information pertaining to the more crucial and frequently encountered legal questions governing the administration of public school expenditures. In addition, his model code should serve as an excellent basis upon which to build new legislative enactment to meet present-day conditions.

The following is an abstract of the important characteristics of the study: 1. Public Schools are state institutions, subject to legislative regulations pertaining to their powers, rights, and liabilities, provided the legal enactment does not conflict with state or national constitutional enactments. 2. School districts are corporations of a lower grade than those known as municipal corporations. The city is generally considered the custodian and depository of school funds; its duty is to keep the funds safe and to disburse them according to the direction of the Board of Education. The courts have generally upheld the power of the Board of Education to control the purposes for which school funds may be expended. 3. Administrative bodies should be granted control over those matters whose nature make it difficult to distinguish the lawful from the unlawful, matters for which there is no well-determined or well-defined standards and matters which are technical in character. Generally speaking, school boards have no powers except such as are conferred by legislative action, either expressly or by necessity. 4. The Legislature can, subject only to constitutional restrictions, direct the expenditure of local and state funds. It has power to set up minimum standards. 5. The proposed code provides for an educational law that can be liberally construed. The definitions of the commonly used terms are given, the powers of the State Board of Education and the Commissioner of Education are definitely enumerated. The method of preparing and adapting the budget, the taxing plan and the procedure for executing the expenditure budget are carefully and with considerable detail stated.

University of Iowa C. P. SLATER

MCGINNIS, WILLIAM C. *School Administrative and Supervisory Organizations in Cities of 20,000 to 50,000 Population.* New York: Columbia University, 1929. 103 pp.

The study deals with the status of school organization in cities of 20,000 to 50,000 population, and it attempts to set forth the factors which determine the kind of organization which should be found.

In the main, the book is an analysis of present practice in administrative organization in 185 American cities, including a study of such items as population, pupil membership, ratios to number of teachers, supervisors, nurses, attendance officers, office employees, and policies of relationship and delegation of functions. It is concluded that no single organization can be fitted to all cities because of several differentiating factors, but that certain principles of relationship apply

to proper organization for all city school systems. Seventeen organization charts are offered as patterns and bases of comparison.

The account of the evolution of school organization in this country though brief is well done, and especially portrays the place that research has occupied in the evolution of the plans of organization.

This work should be of value in the training of administrators, and should be especially useful to public school administrators in the improvement of their organizations.

WALTER D. COCKING
George Peabody College for Teachers

MCALLISTER, JANE ELLEN. *The Training of Negro Teachers in Louisiana.* New York: Columbia University, 1929. vi + 95 pp.

The aims of this study, as stated by the author, are as follows:

1. To give the necessary national, sectional, and local background for the understanding of the Louisiana situation; 2. to describe actual conditions for training teachers in Louisiana; 3. to point out some weaknesses in the present program of teacher training; 4. to encourage Louisiana to make even greater improvement by showing what North Carolina, with similar handicaps has done; and 5. to make constructive recommendations regarding the training of teachers in Louisiana.

Within the limitations imposed by the brevity of the study, all these aims have been excellently carried out. Especially well done is the sketching in of the background against which the constructive portion of the study is projected. The pages devoted to existing conditions, weaknesses, and needs in the Louisiana program for the training of Negro teachers give an illuminating cross-section of an educational problem which is too little understood even by those who live constantly in close contact with it.

In making definite suggestions for a future program for teacher training, the author necessarily ventures from a field of verifiable data into one closely akin to prophecy. The program is good if the prophecy comes true. But changes in the whole range of Negro education are taking place so rapidly that it is hardly possible to guess at the developments of the next twenty years on the basis of what has happened in the past twenty. Witness a single event of tremendous importance for Negro education in Louisiana, which came about while the present study was in the press—the development of the plans for the splendid new Dillard University at New Orleans. It seems probable that the chief value of the volume will be historical rather than predictive.

But it has another value which should not be overlooked, although it may appear to be a sort of by-product of the study. Merely to be told that there are still sections of our country where forty-five dollars are being spent on the education of a child of one race while a child of another race in the same locality must get along with eight dollars; where 71 percent of the teachers in rural schools have had less than two years of training beyond the elementary grades; where there are 283 state approved high schools for children of the white race, and only 4 for an approximately equal number of children of the Negro race; these facts of themselves offer a challenge of the first order to all who believe that in a reasonably equal chance for a sound education for "all the children of all the people," lies the key to the success or failure of our experiment in democracy.

Tougaloo College HENRY W. COBB

VAN ALSTYNE, DOROTHY, *The Environment of Three-Year-Old Children*. New York: Columbia University, 1929. vii + 108 pp.

The aim of this book is to discover what the relationships are between the specific elements of home environment and intelligence test results.

As research studies are like drops of mercury, once touched they break up again and again, one has the feeling of being lost in a maze of problems, but the above volume is a splendid beginning and a valuable contribution in bringing about a genuine interest in the study of the effect that home environment plays upon the intellectual life of the three-year-old child.

Miss Van Alstyne defines her problem as follows: (p. 3) "The purpose of this study is to find the following relationships: "1. The relationships between various environmental factors and the mental age, intelligence quotient, and extent of vocabulary of three-year-old children; 2. the relationships between these factors and the mother's intelligence; 3. the relationships between these various environmental factors and the subtests of the Kuhlmann Revision of the Binet Scale; and 4. the relation between the Kuhlmann intelligence test and the extent of vocabulary at the three-year-old level."

The book proceeds on the plan of the selection of environmental factors which might be related to the mental age and extent of vocabulary of the three-year-old child. This list was then taken as a guide for the investigation and the tests were given in the child's home. The twenty-two items judged to be important favorable factors for the mental and language development of the three-year-old child are very interesting. Each one by itself is a fine subject for further research.

Then the author with an able group of assistants worked out the criteria for the selection of subjects and the tables giving the results of the rules observed. Seventy-five cases are recorded.

After the tabulation of the above findings Miss Van Alstyne gives a discussion of the same in which some very significant correlations are stated. These findings are discussed in the following order: (p. 38) "A. Which environmental factors are more characteristic of the homes of bright children? And which are less? B. Which factors are more related to the child's intelligence than to the mother's, and vice versa? C. Is the vocabulary of these three-year-old children more related to the environmental factors, than is the intelligence test? D. Which is more associated with a composite of the environmental factors, the child's mental age, the socio-economic level of the home, or the mother's intelligence? E. What does a study of the Kuhlmann subtests as related to the environmental factors yield? and F. What further research does this study suggest?"

Chapter five deals with the explanation of the findings and chapter six gives a general summary of the study undertaken. The appendix gives some of the case studies in detail, also the questionnaire and numerous correlation tables.

The book, though not written for the laymen, should find a response amongst those who are interested in the study of the development of the pre-school child.

ANNA M. CHRISTENSEN
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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to Editor A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

ARNOLD, H. J. "Diagnostic and Remedial Techniques for College Freshmen," *The Wittenberg Bulletin*, XXVII (May 5, 1930); Reprint from the *Association of American Colleges Bulletin*, XVI (May, 1930), 18 pp.

A plan of diagnostic and remedial work is suggested for use on the college level of instruction.

CHOATE, ERNEST ALFRED. *The Relation of the Literary Background Recommended by Courses of Study to That Found in Current Literature.* Doctor's Thesis, University of Pennsylvania, Philadelphia, 1930. 72 pp.

A comparison of the literature advocated by courses of study in grades four to twelve in the public schools of the United States with that alluded to in the most widely read literature in the United States.

COURTIS, STUART A. "The Goals of Health Education," Reprinted from *The Research Quarterly*, (October, 1930), 14 pp.

An application of the Gomprez technique to the measurement of health instruction. Contains graphs, tables, and statistical discussion.

DAVIS, MARY DABNEY. "Kindergarten-Primary Education," *United States Department of the Interior Bulletin*, No. 30. Washington: United States Government Printing Office, 1930. 41 pp.

This bulletin presents a discussion of such questions as (1) How early shall children come to school? (2) How may the kindergarten and the early traditional grades be merged to advantage? (3) Where merger has taken place, shall a distinct rung in the educational ladder frankly be recognized? (4) If so, what shall be the length of this new unit, the nature of its curriculum, the methods of instruction, etc.?

DAVIS, MARY DABNEY, AND HEINIG, CHRISTINE. "Housing and Equipping the Washington Child Research Center," *United States Department of the Interior*, Pamphlet No. 13. Washington: United States Government Printing Office, 1930. 24 pp.

A bulletin describing the housing and equipment of the Washington Child Research Center with pictures and illustrations.

EVANS, FRANK O. "Factors Affecting the Cost of School Transportation in California," *United States Department of the Interior Bulletin*, No. 29. Washington: United States Government Printing Office, 1930. 42 pp.

A study of the expenditures for transportation of the pupils in the state of California. Materials are presented on

the relationship of cost to daily mileage and number of pupils carried; on the variations in cost due to business management, to roads, to ownership of equipment, and to the size and type of district.

FOWLKES, JOHN GUY, AND JONES, LEE FRANCIS. "State Support for Public High Schools in Wisconsin," *Bureau of Educational Research Bulletin*, No. 12. Madison, Wisconsin: University of Wisconsin, January, 1931. 82 pp.

The authors offer a plan of state support for local public high schools in the state of Wisconsin, indicating the principles that should underlie a sound program of state support, a distribution formula, and the data necessary for the application of this formula in Wisconsin.

GARRISON, NOBLE LEE. *Current Practice in Coördination of College and Training School Work.* Ypsilanti, Michigan: Michigan State Normal College, 1930. 26 pp.

A study of the coördination of college and training school work in the training of teachers. The material is organized around a number of specific points such as fixing the relation of the training school to the college departments, fixing leaders and responsibility for coöordination work, controlling the revision and administration of the training curricula, etc.

GAUMNITZ, WALTER H. "The Smallness of America's Rural High Schools," *United States Department of the Interior Bulletin* No. 13. Washington: United States Government Printing Office, 1930. 78 pp.

The popularization of secondary education has necessitated the establishment of a large number of very small high schools. No one, however, has known with any definiteness just how small these schools are, how many of them there are, how extensive a program of secondary education they undertake, how well they reach the children dependent upon them for an education, or in which states these small high schools predominate. This study presents statistical data to answer these questions.

GOLL, REINOLD WEIMAR. *The Value of Chronological Age, Mental Age, Number of Permanent Teeth, and Kindergarten Training for Predicting Promotion in the First Grade.* Doctor's Thesis, University of Pennsylvania, Philadelphia, 1930. 69 pp.

The study attempts to determine to what extent the first grade promotion of a child can be predicted from the measurement, at the time of entrance, of the basic factors of chronological age, mental age, number of permanent teeth, and amount of kindergarten training. The author concludes that mental age, by itself, is the best basis for the prediction of first grade promotion.

LOFTFIELD, GABRIEL E. "Secondary Education in Norway," *United States Department of the Interior Bulletin*, No. 17. Washington: United States Government Printing Office, 1930. 112 pp.

A descriptive bulletin dealing with the general characteristics of the Norwegian school system, the administration of secondary education, the curriculum, and special types of secondary schools.

ODELL, CHARLES W. "Predicting the Scholastic Success of College Students," *University of Illinois Bulletin*, No. 52. Urbana, Illinois: University of Illinois, 1930. 43 pp.

A follow-up study of the records of some 10,000 high-school students in the state of Illinois. The author presents data on the prediction of college marks from the data available at college entrance, the prediction of marks during the last three years of college from data available at the end of the freshman year, and the relationship between persistence in college and various other data.

Pittsburgh Schools, V (November-December, 1930), 64 pp. Pittsburgh, Pennsylvania: Board of Public Education.

This number of the *Pittsburgh Schools* is devoted to tests and testing. The kinds of tests available for classroom use, standardized and non-standardized new-type tests, etc., with suggestions on the administering and scoring of tests, and the statistical treatment of test scores.

SOPER, WAYNE W., AND COXE, WARREN W. "Trends in Secondary Education," *University of the State of New York Bulletin*, No. 961. Albany, New York: University of the State of New York, 1930. 71 pp.

It is common knowledge that the secondary schools of this country are different institutions than they were a half or even a quarter of a century ago. The purpose of the study is to present data pertaining to the trends in secondary education in the state of New York, covering the following items: growth in number and size of high schools and academies; enrollment of classes; holding power; percentage of pupils in secondary schools; subject trends; costs; etc.

"Teachers' Guide to Child Development," *United States Department of the Interior Bulletin*, No. 26. Washington: United States Government Printing Office, 1930. 195 pp.

The purpose of this volume is to present a guide to child development. It has been prepared by teachers for teachers. It contains materials on the essentials of an activities program, developmental activities in kindergarten-primary groups, and the planning of informal daily schedules.

University of Kansas Bulletin of Education, III (December, 1930).

Contains articles by Ernest E. Bayles on "Supervisory Problems in Science Instruction in Small High Schools" (pp. 3-12), and by James Naismith on "An Improved Basis for Judging and Comparing the Physical Development of Children" (pp. 14-24); also, a list of titles and authors of theses written for graduate degrees in education, 1929 and 1930.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

ARMSTRONG, CLAIRETTE P. "A Study of the Intelligence of Rural and Urban Children," *Journal of Educational Sociology*, IV (January, 1931), 301-315.

A comparison of the intelligence of rural and urban children for various occupational groups from which the author concludes that rural-village and urban children do not differ in intelligence, either verbal or concrete, if they are of American parentage of equal schools opportunity, and if the parents are of equivalent occupational class.

EXPERIMENTAL STUDIES OF LEARNING AND TEACHING

DAVENPORT, CHARLES B., AND MINOGUE, BLANCHE M. "The Intelligence Quotient and the Physical Quotient: Their Fluctuation and Intercorrela-

tion," *Human Biology*, II (December, 1930), 473-507

The authors present a review of present investigations and an intensive study of 78 white boys on whom physical and mental measurements were made two or more times. Correlations between physical age and mental age were found to vary from .24 to .48. Bibliography.

JORDAN, A. M. "Mental Growth," *Journal of Applied Psychology*, XIV (December, 1930), 517-531.

The 183 children in this investigation were tested for six consecutive times at semi-annual intervals during a period of three years. The mental growth curve is found to be approximately a straight line curve, with a slope that closely approaches an angle of 45 degrees.

WAPLES, DOUGLAS. "What Do Adults Want to Learn," Reprinted from *Journal of Adult Education* (October, 1930), 1-12.

A statistical study of the reading habits of adults giving information on the topics that the members of typical adult groups want to learn about from reading.

ZYVE, CLAIRE. "Experiments in the Teaching of Integrity," *Teachers College Record*, XXXII (January, 1931), 359-374.

The purpose of this experiment is to study the extent to which generalizations in moral conduct will carry over to new specific situations. The specific situation chosen for the control element was the self-correction of Woody-McCall Mixed Fundamentals in Arithmetic Tests, and Morrison-McCall Spelling Tests. From the data at hand it cannot be said that there was any appreciable amount of "carry over" from moral generalizations to new situations.

CURRICULUM RESEARCH

RUGG, EARLE U. "Some Recent Criticisms of American Contemporary Life and Their Implications for Public Education," *School Review*, XXXIX (January, 1931), 15-32.

An analysis of the criticisms of American life made by a number of frontier thinkers. Bibliography.

STONE, C. A., AND GEORGES, J. S. "The Learning Products of a Unit of Instruction in Mathematics," *School Science and Mathematics*, XXXI (January, 1931), 58-67.

A critical discussion of the learning products of an instruction unit in mathematics under the headings of traditional classification, primary and secondary aims, and general and specific aims. A list of typical mathematical aims is given.

MEASUREMENTS, STATISTICS AND METHODS OF EDUCATIONAL RESEARCH

BAKER, GEORGE A. "The Product-Moment Coefficient and the Character of the Marginal Distributions," *Journal of the American Statistical Association*, XXV (December, 1930), 387-396.

A discussion of certain considerations affecting the confidence with which an assertion of the non-independence of two variables can be made from a calculation of the ordinary product-moment coefficient of correlation.

DVORAK, AUGUST. *The Dvorak Correlation Chart*. New York: Longmans, Green and Company, 1930.

The chart is designed to provide a convenient form to be used in the solu-

tions of problems to which the Pearson Product Moment correlation formula is applicable.

MISCELLANEOUS

BURSCH, JAMES F. "Research Projects in the Sacramento City Schools," *California Quarterly of Secondary Education*, VI (January, 1931), 186-188.

The author lists eleven research projects now in progress in the Sacramento City Schools.

WALLACE, CLARA M. "Development of Junior Colleges in Iowa," *Junior College Journal*, I (January, 1931), 176-182.

Contains statistical data pertaining to the development of public junior colleges in the state of Iowa.

NEW TESTS

BUROS, FRANCIS C., AND BUROS, OSCAR K. "Expressing Educational Measures as Percentile Ranks," *Test Method Helps*, No. 3. Yonkers-on-Hudson, New York: World Book Company, 1930.

A manual for expressing educational measures as percentile ranks. Contains discussions, illustrative materials, and tables.

CARRIGAN, ROSE A. *Carrigan Score Card for Rating Teaching and the Teacher.* Yonkers-on-Hudson, New York: World Book Company, 1930.

The several items included in this rating scale were selected on the basis of the opinions of 75 experienced principals and supervisors. The revised card was submitted to 400 principals and supervisors for the weighting of items.

PINTNER, RUDOLF. *Non-Language Primary Mental Test.* New York: Bureau of Publications, Teachers College, Columbia University, 1930.

This test, of the non-language type, is devised for children in the kindergarten and first two grades. Validity .61 for 80 kindergarten children with the Stanford Revision of the Binet; reliability .90 for grade one, .86 for grade two.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Editor Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Proposed National Study of School Finance.—At the Atlantic City meeting in February, 1930, the National Association of State Superintendents and Commissioners of Education requested a study of school finance. The Commissioner of Education has discovered that school revenue and taxation was an important issue in 86 percent of the legislative sessions of 1929-30, that tax commissions are at work in several states, and that taxpayers' associations are actively urging studies in other states. The time seems ripe for national consideration of this problem. Therefore, the commissioner is urging a study at a cost not to exceed $350,000 to extend over a period of four years and recommends that $50,000 be appropriated for the next fiscal year. Should this study be authorized the money appropriated for special fields of research in education would be slightly in excess of $200,000 in the fiscal year 1931-32. This is approximately 20 percent of what has been urged for research in certain bills presented to Congress.

Survey of Land-Grant Colleges.—The land-grant college survey, one of the most comprehensive ever undertaken in the field of higher education, was authorized by Congress more than three years ago. An appropriation of $117,000 was made to defray the cost of the survey. The study was undertaken for the purpose of evaluating the accomplishments, present status, and future objectives of the sixty-nine land-grant institutions of the United States. In the course of the survey sixty-eight recognized authorities in the land-grant college staffs were employed in addition to the specialists of the Office of Education. A very extensive amount of original material was collected upon the major phases of the activities of the institutions. Including a study of the graduates and ex-students of the institutions, the material collected amounted to approximately 500,000 pages of questionnaire returns. Returns totaling 37,342 were received from alumni and former students. Individual schedules containing complete data on the members of the staffs of the institutions were also secured, the number of returns amounting to 12,032.

The land-grant college survey report was published recently. In order that the original material may be made available to the land-grant institutions in the revision of their educational programs and administrative procedures, it is being preserved for further study by the institutions themselves, or by other interested agencies.

Higher Education in Arkansas and Oregon.—The Office of Education recently has conducted surveys of higher education in two states. The collection of data and field work connected with a survey of the state-supported institutions of Arkansas, including four junior

colleges, the state university, and two teachers colleges, were completed during 1930 under the direction of the chief of the division of colleges and professional schools with the assistance of regular members of the divisional staff, and of four recognized authorities not members of the Office of Education staff. The presentation of the report and its publication have been completed. The final report of the survey of state-supported higher institutions in Oregon will include a study of the University of Oregon, Oregon State Agricultural College, and three state normal schools. The findings were presented to the state board of higher education in Oregon during the fall of 1930. In addition to the chief of the division and regular members of the staff, six authorities in higher education, not members of the Office of Education, participated in the investigation.

Dr. A. J. Klein was in immediate charge of the two surveys.

Survey of Secondary Education.—In keeping with a plan discussed by the Commissioner of Education with expert consultants on the National Survey of Secondary Education, Secretary of the Interior, Ray Lyman Wilbur, has appointed for the survey an advisory committee of eminent persons interested in education but not actively engaged in educational work. The membership of the committee is drawn from all states of the Union and is representative of a wide variety of interests and vocations.

The function of the committee is to make recommendations to the survey staff and to review the findings of the survey. Opportunity will be given members of the committee to advise upon important procedures while they are still provisional and to react to the report while it is in tentative form. Thus, at the close of the survey, there will be in every state some prominent and able person, not professionally engaged in education, whose acquaintance with the findings makes it possible for him to interpret the survey to the taxpayer and the general public.

The membership of the advisory committee follows:

Marcus Aaron, Federal Reserve Bldg., Pittsburgh, Pa.

Charles A. Adams, Humboldt Bank Bldg., San Francisco, Calif.

Jane Addams, Hull-House, 800 South Halsted St., Chicago, Ill.

Roger W. Babson, Babson Park, Fla.

Rhodes S. Baker, Republic Bank Bldg., Dallas, Tex.

Morgan Barradale, Holland Tunnel Offices, Canal and Varick Sts., New York City.

W. L. Bonney, Gardiner, Me.

H. Fletcher Brown, DuPont Bldg., Wilmington, Del.

J. O. Carr, 400 North Front St., Wilmington, N. C.

D. H. Christensen, Christensen Construction Co., Salt Lake City, Utah.

Howell Cheney, South Manchester, Conn.

George I. Cochran, 6th and Olive Sts., Los Angeles, Calif.

Mrs. Gertrude Dangberg, Minden, Nev.

Mrs. Louise Dillavoux, Billings, Mont.

John Evans, International Trust Co., Denver, Colo.

J. W. Fesler, 1517 Merchants Bank Bldg., Indianapolis, Ind.

A. Lincoln Filene, 246 Washington St., Boston, Mass.

John H. Finley, New York Times, New York City.

Ernest C. Folsom, Lincoln, Nebr.

J. P. Gray, Nampa, Idaho.

Francis Harman, Hattiesburg, Miss.

Henry J. Haskell, Kansas City Star, Kansas City, Mo.

Henry H. Hilton, Ginn & Co., 2301 Prairie Ave., Chicago, Ill.

Forney Hutchinson, Pastor, St. Luke's Methodist Church, Oklahoma City, Okla.

Charles F. Jenkins, 232 South 7th St., Philadelphia, Pa.

Frank Jenkins, Eugene Daily Newspaper, Eugene, Oreg.

E. Dana Johnson, New Mexican, Santa Fe, N. Mex.

Jerome Jones, Journal of Labor, Atlanta, Ga.

Wm. S. Kenyon, Judge U. S. Circuit Court, Fort Dodge, Iowa.

Charles F. Kettering, Ridgeleigh Terrace, Dayton, Ohio.

Harry R. Lewis, Commissioner of Agriculture, Providence, R. I.

David Littlejohn, State Health Department, Charleston, W. Va.

John E. Martineau, Judge U. S. Circuit Court, Little Rock, Ark.

Charles H. Mayo, Rochester, Minn.

J. D. Millar, Menomonie, Wis.

R. A. Nestos, Minot, N. Dak.

Wm. John Norton, 51 West Warren Ave., Detroit, Mich.

Willmot M. Odell, 506 Capps Bldg., Fort Worth, Tex.

Edward B. Passano, Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore, Md.

Mrs. J. K. Pettingill, 426 West Saginaw St., Lansing, Mich.

Erskine Ramsay, American Trust Bldg., Birmingham, Ala.

R. S. Rogers, Dillon, S. C.

Virginius Shackleford, Orange, Va.

Bolton Smith, Union & Planters Bank Bldg., Memphis, Tenn.

Charles Judson Smith, Lexington, Ky.

Edgar B. Stern, Stern Bldg., New Orleans, La.

W. J. Sutton, Cheney, Wash.

Lucius Thayer, Harrisville, N. H.

Alvin Waggoner, Philip, S. Dak.

Fred Warren, Cheyenne, Wyo.

Wm. Allen White, The Emporia Gazette, Emporia, Kans.

Willis R. Whitney, General Electric Co., Schenectady, N. Y.

Benjamin Williams, Proctor, Vt.

E. M. Williams, 601 Canal Road, Cleveland, Ohio.

Charles F. Willis, 306-316 Homebuilders Bldg., Phoenix, Ariz.

Matthew Woll, 210 American Federation of Labor Bldg., Washington, D. C.

College Teachers of Education.—Secretary S. A. Courtis reports an interesting tentative program planned for the Detroit meeting, February 23-25, of the National Society of College Teachers of Education. Dean H. W. Holmes of Harvard is in charge of the opening program Monday afternoon, February 23, which includes a series of discussions of National Surveys in Education: "The Work of the National Advisory Committee on Education," C. R. Mann; "The Proposed National Center for Educational Research," C. H. Judd; "National Surveys of the Federal Government," W. J. Cooper; "The National Survey of Secondary Education," L. V. Koos; and "The National Survey of the Education of Teachers," E. S. Evenden. Tuesday morning, February 24, is devoted to the various sectional meetings: educational psychology, history of education, philosophy of education, educational sociology, elementary education, secondary education, and educational administration. The Tuesday luncheon meeting is to be addressed by Dean W. F. Russell of Teachers College, Columbia University, on "Present Demands Upon University Departments of Education." The Tuesday afternoon session is a joint program

with the American Educational Research Association, presided over by W. C. Bagley, and devoted to "The Improvement of College Teaching: What Is Being Done About It?" Speakers are: Ben D. Wood, A. S. Barr, M. E. Haggerty, W. S. Gray, and Shelton Phelps. The Wednesday afternoon session deals with the 1931 yearbook of the Society: "The Case for General Scientific Training," F. N. Freeman; and "The Case for Specific Professional Preparation," F. T. Spaulding. The yearbook is an exhaustive treatment of requirements for higher degrees in education.

Ohio State Conference.—Speakers of both national and international prominence will address the Eleventh Annual Ohio State Educational Conference which will be held at Columbus, April 9, 10, 11, 1931. Charles Davila, Ambassador from Chile; Michael West, Principal of Teachers College, Dacca, India; and Newton D. Baker are among the more than one hundred speakers scheduled to participate in the program this year. An attendance of six thousand is anticipated.

A section for guidance counselors will be added, making a total of thirty-six sectional divisions. These group meetings are provided to care for the varied interests of those in attendance. One or more meetings have been arranged for the following sections, alphabetically listed: adult education, attendance supervisors, school nurses and visiting teachers, biological science, city superintendents, clinical psychology, commercial education, county superintendents, educational and intelligence tests, elementary principals, elementary teachers, English, geography, guidance counselors, higher education, high-school principals, history, home economics, industrial and vocational education, journalism, junior high-school principals, kindergarten and primary teachers, Latin, mathematics, modern language, music, non-biological science, parent-teacher association, physical education, religious education, school business officials, school librarians, special education, teacher training, village and consolidated school superintendents, and visual education.

All meetings will focus upon the conference keynote, "Individuality Through Guidance."

International Journal of Education.—A new quarterly publication, *Internationale Vierteljahresschrift für Erziehungswissenschaft*, or the *International Journal of Education*, or *Revue Internationale de Pédagogie Scientifique*, edited by Dr. Friedrich Schneider of Bernhardstr. 157, Köln-Bayenthal, Germany, and published by J. D. Bachem, Köln (Cologne), Germany, made its appearance early in 1931. Among the coöperating editors are Paul Monroe of Teachers College, Columbia University, and Stephen P. Duggan of the Institute of International Education, New York City. The journal will print articles in German, English, and French dealing with problems of international and comparative education: theory and practice, international educational meetings, current literature and bibliographies, terminology, cataloguing systems, geographical and historical influences, organization and administration, legislation, teacher training, buildings and equipment, methodology, etc. The chief purpose of the new publication is to develop an international science of education and to rationalize existing but rather accidental international influences. Manuscripts covering the various fields of education are desired by the editor.

New Library Journal.—The first number of the *Library Quarterly*, a journal of investigation and discussion in the field of library science, appeared in January, 1931. It has been established by the Graduate Library School of the University of Chicago, with the coöperation of the American Library Association, the Bibliographical Society of America, and the American Library Institute, and with the assistance of the Carnegie Corporation of New York. The managing editor is William M. Randall, with Pierce Butler, J. C. M. Hanson, Harriet E. Howe, Henry B. Van Hoesen, Douglas Waples, and J. I. Wyer as associate editors, as well as a staff of advisory editors. The first number contains nine articles and twenty book reviews. The publisher is the University of Chicago Press and the subscription price is five dollars per year.

A Quarter Century of the Carnegie Foundation.—From the establishment of the Carnegie Foundation for the Advancement of Teaching, it was clear to the trustees that the promotion and publication of educational studies was one of the primary methods of carrying out their trust "to encourage, uphold, and dignify the profession of the teacher and the cause of higher education." During the twenty-five years of its history, therefore, the Foundation has issued twenty-five annual reports, twenty-five bulletins, and about two score of smaller publications. These publications, amounting in all to some ten thousand pages, have been distributed, without charge, to interested persons, in editions usually of 7,500 copies, but frequently of 10,000, and sometimes of 20,000 copies. The Annual Report for 1929-30 contains an interesting summary of the problems treated in these publications.

Immediately upon its organization, the Foundation was called upon to adopt as a working basis a series of definitions of such terms as "university" and "college." These were approached from the point of view of entrance requirements in the first four reports, 1906-1909; the seventh and eighth, 1912 and 1913, the eleventh, 1916, and the sixteenth, 1921; the quality of teaching in the third report, 1908; the general relations of colleges and secondary schools, in the fifth, 1910; general standards, in the ninth, 1914; sham universities, in the seventh, 1912; and the influence of the alumni, in the seventeenth, 1922.

The influences of denominational boards of education were discussed in the first, second, and third reports.

The earliest bulletins had a certain relation to the administrative problems of the Foundation. Bulletin No. 1, 1907, *The Admission of State Institutions to the System of Retiring Allowances of the Carnegie Foundation*, included a discussion of some characteristics of governmental control and support of higher education. Related considerations of political aid or interference are discussed in the second, third, fourth, seventh, and eighth reports and in Bulletin No. 10, 1917, *Federal Aid for Vocational Education*. The costs of public education are discussed in the seventeenth and nineteenth reports, 1922 and 1924.

Bulletin No. 2, *The Financial Status of the Professor in America and Germany*, 1908, presented information concerning the salaries of teachers in the one hundred best known universities and colleges in the United States, where the average salary of a full professor was $2,500 a year, and in fifty other institutions, where the average salary of a professor was $1,800. A second section dealt with the retirement of such teach-

ers in the United States and in Germany. Similar provisions in England were examined in the sixteenth report, 1921.

The financial status of college teachers has been considered also in a number of annual reports. The first report, 1906, discussed salaries in 327 institutions; the eighth, 1913, fifteenth, 1920, seventeenth, 1922, twenty-first, 1926, and twenty-third, 1928, reports recorded encouraging improvements.

Provisions for the retirement of college teachers represent the chief activity of the Foundation. The first report, 1906, discussed the provisions already operative in several institutions and presented a bibliography of the subject. This discussion was continued in the seventh, eighth, and tenth reports; the costs of such systems were discussed in the first, third, and fourth reports; the limitations of independent systems were canvassed in the fifteenth, seventeenth, eighteenth, and twenty-first reports; and contributory plans were recommended in the seventh.

The cognate subject of life insurance for college teachers was taken up in the third, fourth, and nineteenth reports.

Bulletin Number Nine, *A Comprehensive Plan of Insurance and Annuities for College Teachers*, 1915 and 1916, summarizes the experience of the Foundation and the plans for the Teachers Insurance and Annuity Association of America, which was inaugurated in 1918. The response of college teachers and their institutions to the suggestions of Bulletin No. 9 were discussed in the eleventh and twelfth reports, 1916 and 1917, and the progress of the Association has been recorded in the thirteenth and all succeeding reports. The status of retired teachers is discussed in the Nineteenth.

Provision for the retirement of teachers other than those in universities and colleges throughout the United States and in other countries has repeatedly engaged the attention of the Foundation in the seventh and each succeeding report, and also in Bulletin No. 12, *Pensions for Public School Teachers*, 1918, a report for the National Education Association; Bulletin No. 17, *Retiring Allowances for Officers and Teachers in Virginia Public Schools*, 1926; and Bulletin No. 22, *A Retirement Plan for Colorado Public Schools*, 1928.

All other systems of retirement that may illustrate those for teachers, namely systems for the army and navy, for clergymen, members of the civil service, and for industrial workers, have been the subject of continual study.

Military pensions were discussed in the first, seventh, ninth, thirteenth, and twenty-fourth reports.

Systems of retirement for clergymen and other religious workers were considered in the eighth, tenth, eleventh, fifteenth, sixteenth, nineteenth, and twentieth reports; pensions for workers in libraries and museums in the twenty-first and twenty-fifth; for nurses in the twenty-second; and for hospital employees in the twenty-fourth.

Civil service retirement has been discussed in the seventh, eighth, ninth, eleventh, twelfth, fifteenth to eighteenth inclusive, twentieth, twenty-first, and twenty-third.

Industrial pensions are considered in the seventh, ninth, tenth, eleventh, and in the thirteenth and all subsequent reports. State pensions for the aged were discussed in the nineteenth and twentieth.

The twenty-fourth report and the latest Bulletin, No. 25, *The Social Philosophy of Pensions*, 1930, endeavor to summarize suggestions from every source in

a comprehensive yet simple system of pension principles and procedures.

Following discussions in the second and fourth reports, Bulletin No. 3, *Standard Forms for Financial Reports of Colleges, Universities, and Technical Schools*, 1910, represented an effort to encourage institutions of higher education to publish clear and adequate annual financial statements. The suggestions of the bulletin were adopted in a considerable number of institutions and a second edition of the bulletin was published in 1921. Anticipated by discussions in the second and fourth reports, Bulletin No. 5, *Academic and Industrial Efficiency*, 1910, was met by the criticism that the Foundation was endeavoring to industrialize higher education. Many of its suggestions for the improvement of the business administration in educational institutions, however, have since become matters of course. College advertising was given especial attention in the fourth and seventh reports and college catalogues in the eighth, problems of tuition in the tenth, and other administrative problems in the fourteenth.

The problems of professional education were entered upon in the third report, and in a series of bulletins illustrating the Foundation's customary procedure of entrusting its studies to authors who, although thoroughly informed concerning the problems discussed, are free from the almost unavoidable preconceptions of practitioners in the field that is being discussed. While endeavoring to meet every standard of scholarship, all of the Foundation's publications approach their subjects from the point of view of that intelligent general public which is interested in and supports all educational projects.

Two bulletins concerning medical education, No. 4, *Medical Education in the United States and Canada*, 1910, and No. 6, *Medical Education in Europe*, 1912, coincided with the beginning of widespread improvements. The former bulletin, prepared in coöperation with the American Medical Association and its Council on Education, made known the facts concerning every medical school in North America and gave suggestions for improvement which have been generally adopted. Since their publication the number of medical schools in North America has decreased from 155 to 85; the financial support of the remaining schools has increased greatly and requirements for admission, the nature of the curriculum, the procedure in teaching, and the conditions of medical licensure have all shown striking improvement. Further discussions of medical education are contained in the fifth, seventh, eighth, ninth, thirteenth, fifteenth, and sixteenth reports.

Preceded by discussions in the seventeenth and eighteenth reports, a related field was studied exhaustively in Bulletin No. 19, *Dental Education in the United States and Canada*, 1926. The discussion was continued in the twenty-first and all subsequent reports, recording the vanishing of proprietary dental schools, notable improvements in the curriculum, and appreciable advances in dental research.

Following discussions of legal education in the third, eighth, and ninth reports, the year 1914 inaugurated the Foundation's comprehensive publications concerning legal education, with Bulletin No. 8, *The Common Law and the Case Method in American University Law Schools*, written by a distinguished European scholar. Later bulletins concerning legal education include No. 13, *Justice and the Poor*, 1919, with a second edition in 1921, and a third in 1924; No. 15, *Training for the Public Profes-*

sion of the Law, 1921, a history of the developments leading to present conditions; and No. 21, *Present Day Law Schools in the United States and Canada*, 1928, which described each existing school and discussed their organization, curricula, and resources, and the influence of methods of admission to the bar and of professional associations. All of these studies were undertaken at the request of a committee of the American Bar Association. Current progress in legal education has been recorded in the tenth and all subsequent reports and, beginning with the year 1926, there has been issued separately an annual *Review of Legal Education in the United States and Canada*.

Preceded by discussions, from 1914 to 1917, in the ninth, tenth, eleventh, and twelfth reports, Bulletin No. 11, *Engineering Education*, 1917, prepared at the request of a joint committee of national engineering societies, inaugurated studies which have since been continued and expanded under the auspices of the Society for the Promotion of Engineering Education. Some discussion of the subject was continued in the thirteenth report.

Following discussions in the ninth to the fourteenth reports, 1914 to 1919, inclusive, Bulletin No. 14, *The Professional Preparation of Teachers for American Public Schools*, issued in 1920, has become a textbook in many teacher training institutions. The discussion was continued in the fifteenth, sixteenth, and seventeenth reports and attention was given to the responsibility of teachers in the eighteenth report. As an incident to the preparation of Bulletin No. 14 there was published in pamphlet form a study of *Comparative Curricula for the Professional Preparation of Teachers for American Public Schools*.

Agricultural education was touched upon in the fourth, seventh, and eleventh reports.

State systems of education were considered in the fifth and sixth reports. Bulletin No. 7, *Education in Vermont*, 1914, prepared at the request of an educational commission of that state, discussed, apparently for the first time, all of the educational activities in a state as parts of a single problem. The progress and results of this study are considered in the eighth, ninth, and tenth reports. Discussion of the relations of schools and colleges in the State of Pennsylvania in the twenty-third and twenty-fourth reports is being followed by a comprehensive study of this problem, which is still in preparation. Educational progress was considered from a national point of view in the sixth and nineteenth reports and a similar approach to a wider governmental area is represented by Bulletin No. 16, *Education in the Maritime Provinces of Canada*, 1922. International comparisons were undertaken in the twentieth and twenty-first reports, and in Bulletin No. 20, *The Quality of the Educational Process in the United States and Europe*, 1927.

Preceded by discussions in the eighteenth, twentieth, twenty-first, and twenty-second reports, the significance of extra-curricular activities of students in schools, colleges, and universities prompted the publication of three bulletins: No. 18, *Games and Sports in British Schools and Universities*, 1927; Bulletin No. 23, *American College Athletics*, 1929; and Bulletin No. 24, *The Literature of American School and College Athletics*, 1929, which summarizes the facts and views of a thousand significant books, pamphlets, and articles. The twenty-third and all later reports have continued the discussion.

Cincinnati Achievement Testing.—Stanford Achievement Tests were given in October, 1930, to approximately ten thousand pupils in the fifth and seventh grades of the Cincinnati public schools. The tests were given and scored by the Bureau of School Research, of which Dr. Douglas E. Scates is director. Tabulations were made not only for the city as a whole but for each school and each class. The results were included in a 117 page mimeographed report which was given to each principal and to each teacher concerned.

The report was presented and discussed in a series of four meetings with principals and teachers. While the survey aspect of the testing was considered important for the superintendent's office, the value of the results for the improvement of classroom work was kept uppermost. Each teacher's copy of the report contained a list of her pupils with their scores on each section of the test, and the distributions of her class on total score and chronological age. The principal's copy contained duplicates of both the class record and the distributions for each teacher, and in addition contained distributions for his entire fifth and seventh grades on each of the ten sections of the test. Hollerith machines were used in preparing the listings and the distributions. The reason for making returns in such detail was the belief that if teachers were freed from the mechanical work of scoring and tabulating they could give undivided attention to a study of the results and the possibilities of their use.

The third part of the report, prepared by Fannie J. Ragland, director of upper elementary grades, carries through an analysis of the scores of three classes as an illustration of the methods which each teacher can use in studying her own class and in diagnosing their difficulties. The report takes a stand somewhat contrary to two uses of scores which are sometimes advocated. For one thing the teachers were assured that the results would not be taken as a measure of the quality of their teaching, since the scores were produced by many factors other than teaching skill. Again, principals and teachers were urged not to make reclassifications of pupils on the basis of the test scores unless a careful study were made of the pupils' social and physical development, and all factors were found to be in agreement in indicating change. A strong recommendation was made that teachers seek to find suitable materials and activities for the variety of abilities in their classes rather than to seek for a reduction of the variability to a minimum through administrative means.

Plans are being formulated by Superintendent E. D. Roberts for follow-up work by using the results of the tests in the improvement of curriculum materials and instructional methods in fields where the need is indicated.

Testing in Michigan.—Bulletin No. 135 (mimeographed), November 26, 1930, of the Bureau of Educational Reference and Research, University of Michigan, is a report of the elementary testing program administered in October, 1930. Thirty-four city school systems administered one or more of the three tests: Detroit Word Recognition Test (Form A), Detroit Reading Test (Test I), and the New Stanford Achievement Test (Form V).

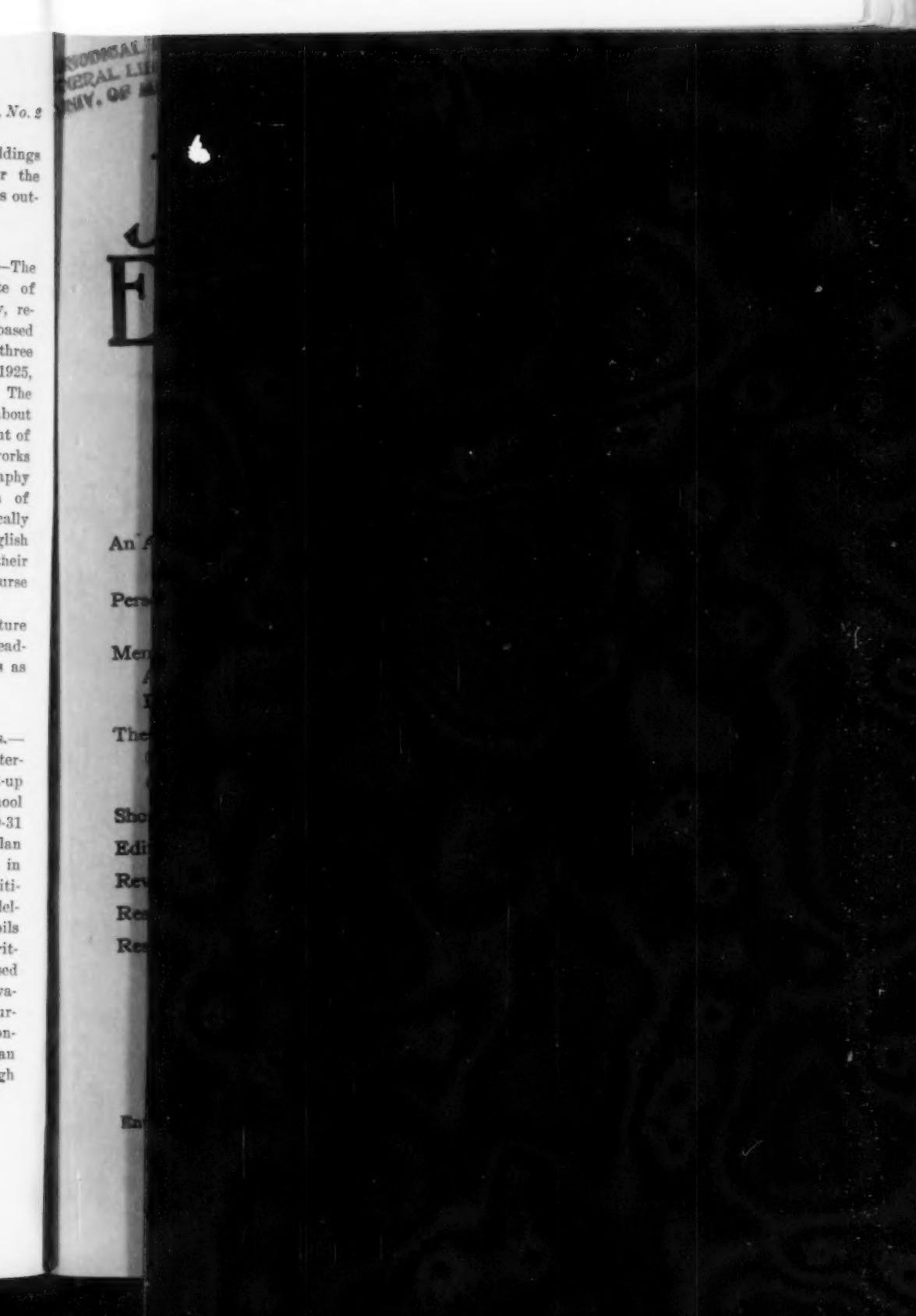
Oakland Mental Testing.—Three mimeographed bulletins of the Oakland (California) Department of Research and Auxiliary Agencies report the results of mental tests administered in the fall of 1930. Either the Detroit First Grade Intelligence Test, the Park Franzen Test

of Readiness for Grade One, the Pintner-Cunningham Primary Mental Test, or the Stanford-Binet Individual Test was given to 2,345 first-grade pupils in fifty-three schools. The Kuhlman-Anderson Mental Test was given to 2,056 third-grade pupils. The Terman Group Test of Mental Ability was administered to 1,811 pupils in the eighth grade.

Philadelphia School Research.—Recent bulletins of the Division of Educational Research, Philadelphia Public Schools, report studies of: teaching load in senior high schools; diagnosis and remedial teaching in the fundamental operations of arithmetic; individualization of instruction and grouping by ability in junior and senior high schools; and the Philadelphia diagnostic test in algebra. Teaching load in Philadelphia for most subjects is less than in comparable cities. Twenty percent of the teachers have less than twenty teaching periods per week, although they carry a variety of non-teaching assignments. The types of formally individualized instruction in use are: individual assignment sheets, minimum-maximum assignments, other kinds of differentiated assignments, and learning analyses based upon objective individual analyses of difficulty. In nine out of thirteen senior high schools and fifteen out of twenty junior high schools a few pupils are affected by formal plans of individualization.

Ten Years of Service in Washington.—The Annual Report of the Board of Education, 1929-1930, District of Columbia, reviews the accomplishments of the decade, 1920-1930, under the superintendency of F. W. Ballou. The various changes and improvements brought about are discussed under the headings of: legislation, organization, administration, instruction and supervision, and buildings and equipment. The program for the school year, 1930-1931, and beyond is outlined.

Reading of Wellesley Alumnae.—The Book Publishers Research Institute of 730 Fifth Avenue, New York City, reports a study of reading interests based on replies received from fifty-three Wellesley graduates of the class of 1925, distributed over seventeen states. The results show that these women read about four times as much fiction (62 percent of the total books named) as serious works like history and essays; that biography comprises approximately one-eighth of their reading; that they read practically no mystery novels; and that English literature has far more influence on their present reading than any other one course taken in college.

The Institute plans in the near future to release statements concerning the reading of graduates of such institutions as Harvard, Michigan, etc.

Individual versus Group Instruction.—Superintendent R. B. Marston of Sisterville, West Virginia, describes the set-up of an experiment in the local high school which seeks to compare during 1930-31 the merits of the traditional group plan of teaching versus the Dalton plan in ninth grade English, general science, citizenship, and arithmetic. The parallel-group technique is employed with pupils paired on the basis of a number of criteria; the groups were rotated or reversed at the end of the first semester. A variety of tests are being used in measuring results. The experiment may continue through 1931-32. The Dalton plan has been in use in the Sisterville High School over a five-year period.